

## CHAPTER 3.0 EXISTING ENVIRONMENT

This chapter describes the existing environment for each resource potentially affected by the project. The organization of this chapter is by type of resource. Resources not affected or minimally affected by the project are addressed collectively in Section 3.12 and in greater detail in Appendix C. The resources addressed in Appendix C are Land Use, Farmland, Noise, Regulated Materials, Air Quality, Social, Economics, Energy, and Climate Change. Potentially affected resources are addressed in individual sections of this chapter. Many of the resources in or near the Study Area are shown in Figure 3-1. Chapter 4.0, Environmental Consequences, discusses the potential social, economic, and environmental impacts that the alternatives under consideration would have on each potentially affected resource.

Figure 3-1 illustrates the Study Area. This Study Area will be used for analysis of the resources, unless otherwise noted.

### 3.1 WILD AND SCENIC RIVERS

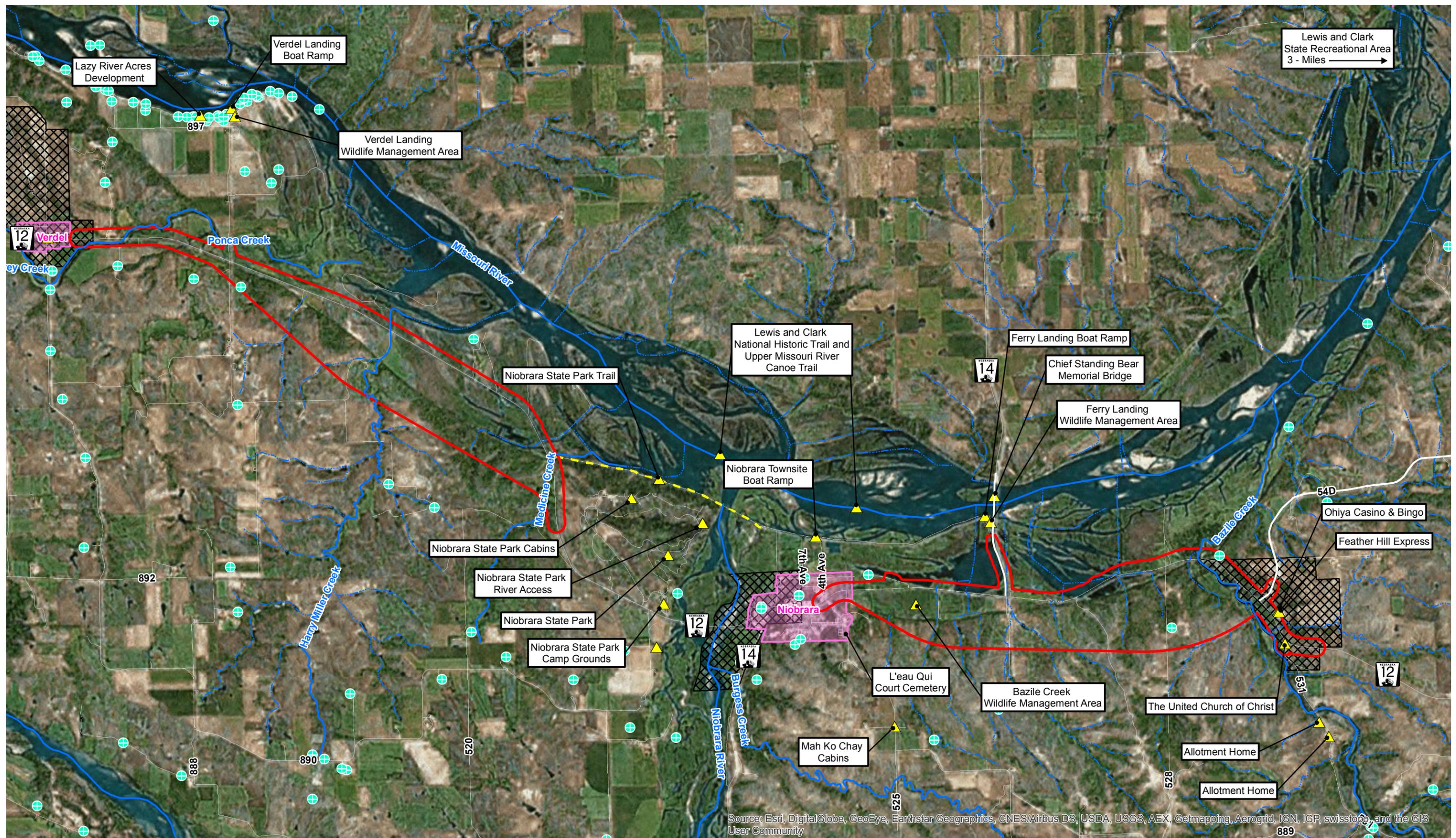
Congress passed the Wild and Scenic Rivers Act (16 USC 1271-1287) in October 1968 to establish a method for providing federal protection for the nation's remaining free-flowing rivers and preserving them and their immediate environments for the use and enjoyment of present and future generations. The 59-Mile District, a segment of the MNRR extending from Gavins Point Dam near Yankton to Ponca State Park, near Ponca, Nebraska, was added under an amendment to the Wild and Scenic Rivers Act in 1978. As identified in Section 3.9, Recreation, the Study Area is adjacent to the 39-Mile District of the MNRR, which was designated in 1991 (see Figure 3-2, Missouri National Recreational River Boundary, 39-Mile District). Administrative responsibility for the river is shared between the Secretary of the Interior, acting through NPS, and the Secretary of the Army, acting through the Corps, while NPS manages the MNRR and has ultimate responsibility for rendering Section 7(a) of the Wild and Scenic Rivers Act determinations, as outlined earlier in Chapters 1 and 2 of this document.

The MNRR was designated as such for the following purposes:

- To preserve the river in a free-flowing condition.
- To protect the river for the enjoyment of present and future generations.
- To provide stream bank protection compatible with the river's significant natural and cultural resources.
- To preserve the significant recreational, fish and wildlife, and historic and cultural resources.
- To provide for a level of recreation and recreational access that does not adversely impact the river's significant natural and cultural resources.

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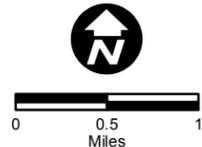
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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, ICP, swisstopo, and the GIS User Community



Legend	
	Resource
	Wells
	Roads
	WHPA
	Waterway
	Niobrara State Park Trail
	City Limits
	Study Area
	Bazile Creek WMA
	Ferry Landing WMA
	Niobrara SP
	Verdel Landing WMA



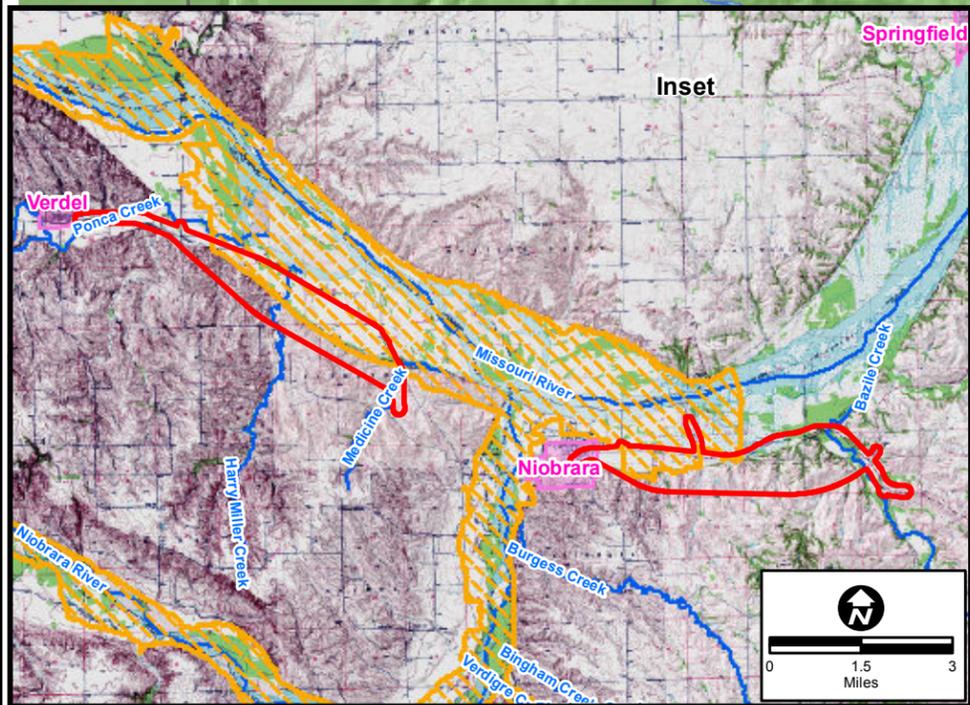
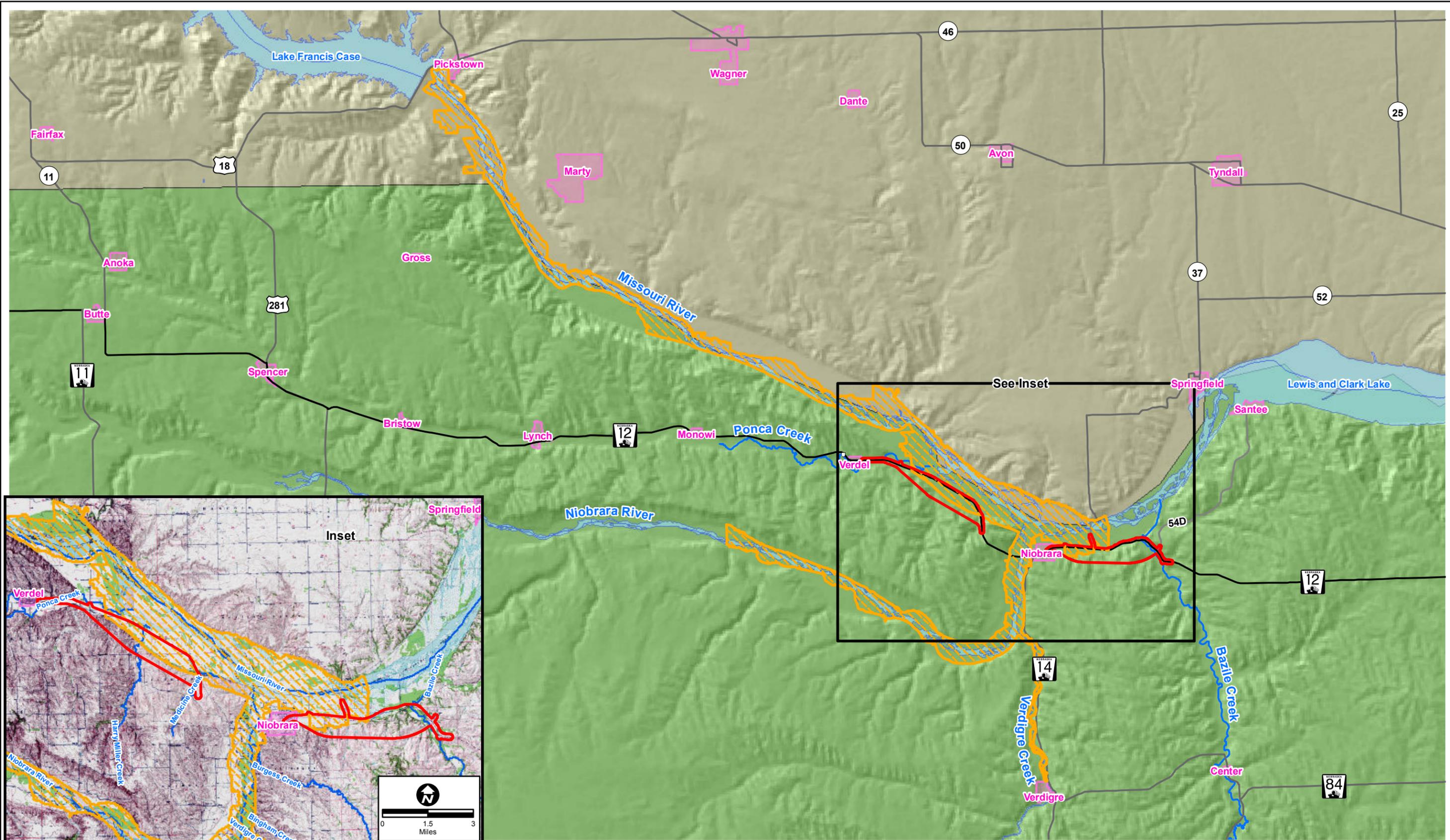
### Sites of Interest in or Near the Study Area

N-12 Niobrara East and West  
Knox County, Nebraska  
Environmental Impact Statement



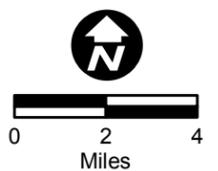
DATE	October 2015
FIGURE	3-1

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- Legend**
- Missouri National Recreational River Boundary (39-Mile District Boundary)
  - Study Area
  - City Limits

- County
- Nebraska
- South Dakota



**Missouri National Recreational River Boundary, 39-Mile District**  
 N-12 Niobrara East and West  
 Knox County, Nebraska  
 Environmental Impact Statement



DATE	October 2015
FIGURE	3-2

As discussed in Chapter 2.0, Alternatives, Section 7(a) of the Wild and Scenic Rivers Act provides standards of evaluation to protect a designated river from the harmful effects of federally assisted water resources projects (including roadway construction projects). NPS has developed a policy to integrate the Section 7(a) Evaluation with the NEPA process, which is consistent with the intention of NEPA to serve as an umbrella law by integrating other environmental reviews and consultation requirements. Under NPS policy, NPS must become a cooperating agency in preparation of any EIS for all federal actions that involve a water resources project that may affect an NPS-managed component of the Wild and Scenic Rivers System (NPS 1998).

NPS is acting as a cooperating agency for this project. The Corps and NPS have coordinated to develop supporting information for a Section 7(a) of the Wild and Scenic Rivers Act Preliminary Evaluation document (see Appendix A). NPS would use this document as a framework to complete its Section 7(a) of the Wild and Scenic Rivers Act evaluation and final determination following publication of the Draft EIS. The coordination among the Corps and NPS is ongoing. The preliminary Section 7(a) Evaluation supporting information describes the effects of the project on the free-flowing condition, water quality, scenic, recreational, fish and wildlife, and cultural values for which the MNRR was included in the National Wild and Scenic Rivers System.

## 3.2 FISH AND WILDLIFE

The following section presents a general description of fish and wildlife and their habitats in the Study Area, with an emphasis on more commonly occurring species. The Study Area for reviewing impacts on fish, other aquatic resources, and wildlife resources and habitat for the project extends west to the town of Verdell and east to the intersection of N-12 and County Road 531. The Study Area extends to the north of the existing alignment of N-12 and to the south of the bluffs alignment. The Study Area includes all water bodies potentially affected by the Action Alternatives. The water bodies include Bazile Creek, Ponca Creek, Harry Miller Creek, Medicine Creek, other unnamed tributaries to the Missouri River, and the floodplain wetlands that are connected to the Missouri River. The Niobrara River and the Missouri River main channels are not located within the limits of construction of any of the Action Alternatives; however the species that occur in these rivers are discussed because of the potential for migration into other waters. Figure 3-1 shows the Study Area and associated fish and wildlife resources.

The existing N-12 roadway conveys water through a series of structures and culverts. Most of the culverts (28 culverts) are concrete metal pipes that are 24 to 60 inches in diameter. There are fewer single, twin, triple, or quad concrete box culverts (13 culverts) that range from 5 feet to 14 feet in height. On the west segment, there are 5 bridges that range from 12-foot to 120-foot spans; these include the bridges over Ponca, Harry Miller and Medicine creeks. On the east segment there is a single bridge with a 230-foot span over Bazile Creek.

Aquatic resources discussed include both fish and mussels. Wildlife resources discussed include migratory birds and raptors, big game, reptiles, amphibians, and other wildlife species. A detailed description of species expected to occur in the Study Area and their associated habitats is provided in the Fish and Wildlife Technical Memorandum (see Appendix D). Federally and state-listed T&E species and other protected species are addressed in Section 3.3, Protected Species, and Appendix E.

### 3.2.1 Regulatory Framework

Fish and wildlife species and their habitats are protected under both federal and state laws. The Fish and Wildlife Coordination Act (16 USC 661-667c) requires the lead federal agency (in this case, the Corps) to consult with USFWS and NGPC on issues related to conservation of wildlife resources for federal projects resulting in modifications to waters or channels of a body of water.

The bald eagle (*Haliaeetus leucocephalus*) has been removed from the USFWS federal T&E species list and from the state of Nebraska T&E species list. However, the bald eagle is still protected under the BGEPA (16 USC 668a-d) and the MBTA (16 USC 703-712). The BGEPA (16 USC 668a-d), originally passed in 1940, prohibits the take, possession, transport within the United States, import, export, purchase, sale, trade, barter, or offer for purchase, sale, trade, or barter any bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*), alive or dead, including any part, nest, or egg, unless allowed by permit (50 CFR 22). Take is defined by the BGEPA as the following: to “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb” a bald or golden eagle. The term disturb under the BGEPA means “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior” (72 31132). USFWS has the authority of the federal government to administer the BGEPA.

The MBTA (16 USC 703-712) protects migratory birds, including raptors, and any active nests. Specifically, the MBTA prohibits activities that may harm migratory birds, their young, or their eggs, including the removal of active nests that results in the loss of eggs or young. In Nebraska, most nongame birds with the exception of rock dove (pigeon) (*Columba livia*), house sparrow (*Passer domesticus*), and European starling (*Sturnus vulgaris*), are protected under the MBTA.

NGPC is the official state agency for all matters pertaining to fish and wildlife management. NGPC issues regulations and develops management programs for fish and wildlife, as directed by Nebraska Revised Statute (Neb. Rev. Stat.) Chapter 37. Take of game species, such as deer, turkey, pheasant, quail, and some species of waterfowl, requires a hunting license. Take of sport fish, such as walleye, largemouth bass, and channel catfish, requires a fishing license. Take of nongame species, such as small mammals, birds, and reptiles, is permitted for specific activities, such as scientific collecting. In addition, NGPC, through the Nebraska Natural Legacy Project, has developed lists of at-risk species that are used to help prioritize conservation planning and actions. Tier I species are those that are globally or nationally most at-risk of extinction and occur in Nebraska, and Tier II species are considered either state critically imperiled, state imperiled, or state vulnerable. The at-risk species lists, composed by Schneider et al. in 2011, are provided in Appendix D.

**What is an ecoregion?**

An ecoregion is a relatively large unit of land and water delineated by the biotic and abiotic factors (for example, climate, topography, geology, and vegetation) that regulate the structure and function of the ecosystems within it. There are two main ecoregion maps for the United States, one developed by the U.S. Forest Service (Bailey et al. 1994, as cited in Schneider et al. 2011) and the other developed by EPA (Omernik et al. 1987, as cited in Schneider et al. 2011). For the Nebraska Natural Legacy Project, ecoregions of Nebraska and Kansas (Chapman et al. 2001, as cited in Schneider et al. 2011) were developed by USFS and EPA. Bailey’s section level line was used to delineate the western boundary of the Tallgrass Prairie Ecoregion (Schneider et al. 2011).

**What is a Biologically Unique Landscape?**

A Biologically Unique Landscape is a specifically selected landscape that offers some of the best opportunities for conserving the full array of biological diversity in Nebraska. Landscapes were selected based on known occurrences of ecological communities and at-risk species and were selected to meet the goals that NGPC had set for each community type and Tier I species (Schneider et al. 2011). Tier I species are discussed further in Section 3.3, Protected Species.

**3.2.2 Habitat**

The Missouri River, its associated waterways, the adjacent floodplain and uplands provide diverse biological resources that support a variety of fish and wildlife populations. The Study Area is located

within the Mixedgrass Prairie Ecoregion, between the Tallgrass Prairie Ecoregion to the east and the Shortgrass Prairie Ecoregion to the west. The Mixedgrass Prairie Ecoregion is a transition zone where the Tallgrass Prairie and Shortgrass Prairie ecoregions merge, so it takes on characteristics of both. Plant composition varies considerably depending on soil type, topography, weather influences, and land use. Its highly diverse flora and fauna includes a mix of species also found in the Tallgrass Prairie and Shortgrass Prairie ecoregions.

The Study Area lies within two of Nebraska's Biologically Unique Landscapes, as described by the Nebraska Natural Legacy Project (Schneider et al. 2011). The Lower Niobrara River Biologically Unique Landscape includes the Niobrara River channel and a 2-mile buffer on each side of the river from central Brown County, Nebraska, eastward to its confluence with the Missouri River in Knox County. The river in this reach has a broad braided, somewhat shallow channel, and the channel has many open sandbars and wooded islands. Much of the valley bottom is in crop production, though some areas support cottonwood and bur oak woodlands. Some wet meadows and marshes remain in the floodplain. The bluff slopes are mainly mixedgrass prairie with some oak woodlands in the east. Sandbars on the lower stretch of the Niobrara River from Holt County, Nebraska, eastward support colonies of the federally and state-listed interior least tern (*Sterna antillarum athalassos*) and piping plover (*Charadrius melodus*) (see Section 3.3, Protected Species). Bald eagles are known to nest along this reach of the Niobrara River. Twelve Tier I at-risk species can be found in the Lower Niobrara River Biologically Unique Landscape: Iowa skipper (*Atrytone arogos iowa*), prairie moonwort (*Botrychium campestre*), piping plover, whooping crane (*Grus americana*), ottoe skipper (*Hesperia ottoe*), wood thrush (*Hylocichla mustelina*), Northern river otter (*Lontra canadensis*), long-billed curlew (*Numenius americanus*), pallid sturgeon (*Scaphirhynchus albus*), regal fritillary (*Speyeria idalia*), interior least tern, and Bell's vireo (*Vireo bellii*) (Schneider et al. 2011).

The Verdigris and Bazile Creek Watersheds Biologically Unique Landscape occupies the watersheds of Verdigris Creek and Bazile Creek in Cedar, Knox, Holt, and Antelope counties in Nebraska. The streams are spring-fed coldwater streams that have unique fish assemblages, such as Iowa darters (*Etheostoma exile*), johnny darters (*Etheostoma nigrum*), plains topminnow (*Fundulus sciadicus*), and western silvery minnow (*Hybognathus argyritis*). These watersheds contain a mosaic of cropland, restored native and exotic grasslands, and native tallgrass and mixedgrass prairie. Most of the prairies have been somewhat degraded by use of livestock grazing regimes that reduce native species diversity and promote exotic plant invasion. Oak woodlands are common along the streams and in ravines. The northern portion of the landscape includes Missouri River bluffs and breaks. These areas support loess bluff mixedgrass prairie, tallgrass prairie, and deciduous woodlands. Fifteen Tier I at-risk species are identified as occurring within the Verdigris and Bazile Creek Watersheds Biologically Unique Landscape: burrowing owl (*Athene cuniculari*), Iowa skipper, prairie moonwort, piping plover, plains topminnow, whooping crane, ottoe skipper, wood thrush, American burying beetle (ABB) (*Nicrophorus americanus*), plains pocket mouse (*Perognathus flavescens*), regal fritillary, interior least tern, buff-breasted sandpiper (*Tryngites subruficollis*), greater prairie-chicken (*Tympanuchus cupido*), and Bell's vireo (*Vireo bellii*) (Schneider et al. 2011).

**What is the NNHP ranking system?**

Natural community types are ranked using the following system to help determine conservation priorities:

S2 = Imperiled in the state – at high risk of extirpation or elimination due to extreme very restricted range, very few occurrences, steep declines, or other factors.

S3 = Vulnerable in the state – at moderate risk of extirpation or elimination due to a restricted range, relatively few occurrences, recent and widespread declines, or other factors.

S4 = Apparently secure in the state – uncommon, but not rare, some cause for long-term concern due to declines or other factors.

S5 = Secure in the state – common, widespread and abundant.

The habitat examined in the Study Area consisted of agricultural land, rangeland, woodland, and wetlands. The Missouri River bluffs woodlands contain several natural communities that are ranked by the Nebraska Natural Heritage Program (NNHP) as S2 and S3. This habitat type is considered a rare resource. The rangeland in the Missouri River bluffs and floodplains contains natural communities that are ranked S4 and S5. Although this rangeland provides habitat for a range of species, it is fairly abundant and is not considered rare or imperiled. The floodplain wetlands of the Missouri River contain natural communities that are ranked S4. These wetlands are considered abundant and expanding and therefore are not considered a rare resource. The wetlands in the Missouri River bluffs contain natural communities that are ranked S2 and are considered to be rare and imperiled in the state of Nebraska (Rolfmeier and Steinauer 2010).

To determine land use, the Study Area was superimposed on aerial photographs and overlaid with the 2011 National Land Cover Database (U.S. Geological Survey [USGS] 2014). NDOR's wetland delineation data were used to identify wetlands and other waters of the U.S. (see Appendix F).

As discussed in the land use section in Appendix C, rangeland, which includes pastures, range, and grasslands, is the primary wildlife habitat in the Study Area. Land used for agricultural production is discussed with rangeland. The other main wildlife habitat types in the Study Area are woodlands and wetlands. Figures C-1a and C-1b in Appendix C show the locations of these land use types.

### 3.2.3 Fish and Aquatic Resources

In and around the Study Area, fish and aquatic communities exist in the associated backwaters and wetlands of the Missouri River, Ponca Creek, Bazile Creek, and the Lake. Although not located within the Study Area, the Lake, which is part of the Missouri River, is included in the discussion of the existing environment because of its proximity to the Study Area and the mobile nature of fish and aquatic species. Very few studies and surveys have been conducted on fish and aquatic species within the Action Alternative alignments in the floodplains; however, wetlands are used by many fish species for spawning and nursery habitat. Native fishes in the Missouri River between Fort Randall Dam and the headwaters of the Lake, which includes the 39-mile District of the MNRR, are relatively productive and dominated by cool and warm water species (NPS 2009a). Fish species common to the 39-Mile District of the MNRR include freshwater drum (*Aplodinotus grunniens*), channel catfish (*Ictalurus punctatus*), common carp (*Cyprinus carpio*), walleye (*Sander vitreus*), white crappie (*Pomoxis annularis*), yellow perch (*Perca flavescens*), and goldeye/herring (*Hiodon alosoides*). Less common species in this reach include sauger (*Sander Canadensis*), flathead catfish (*Pylodictis olivaris*), and shovelnose sturgeon (*Scaphirhynchus platyrhynchus*) (Berry and Young 2004). A naturally reproducing population of paddlefish (*Polyodon spathula*) occurs in this river reach (Corps 2010). In addition, this river reach is designated as a recovery priority area for the pallid sturgeon (*Scaphirhynchus albus*), discussed in Section 3.3, Protected Species (USFWS 1993). NPS provides a list of fish species reported in the MNRR and comments on their status and abundance (NPS 2009b). This list is included in an attachment in the Fish and Wildlife Technical Memorandum (Appendix D).

Mussels have been identified in the 39-Mile District of the MNRR, with the fragile papershell (*Leptodea fragilis*) and pink papershell (*Potamilus ohioensis*) being the most common (Shearer et al. 2005); however, wetland areas potentially impacted by the Action Alternative alignments do not contain appropriate habitat for these species and smaller scale mussel surveys have found very few specimens in this type of habitat. In the summers of 2010 through 2012, researchers from the University of South Dakota (USD) conducted a freshwater invertebrate survey in the Niobrara delta region from the confluence of the Niobrara and Missouri rivers to the upper end of the Lake (Kerby and Swanson 2013). Two species of live mussel were found, the white heelsplitter (*Lasmigona*

*complanata*) and the giant floater (*Pyganodon grandis*). Mussels prefer habitats with rocks, pebbles, and coarse sandy substrates (Perkins and Backlund 2000). The habitat area in the floodplain wetlands and Niobrara River confluence contain very fine silt and water carrying a high sediment load (Kerby and Swanson 2013).

Fish designated as T&E species by federal or state resource agencies are discussed in Section 3.3, Protected Species.

### 3.2.4 Wildlife

Wildlife is abundant in and along the MNRR as well as the Niobrara National Recreational River and Verdigris Creek Recreational River, primarily because of the varied habitat. The rivers and island complexes provide feeding, resting, and breeding areas for mammals, water birds, reptiles, and amphibians (NPS 2007).

**What is carrying capacity?**  
Carrying capacity is the number of individuals or biomass of a species that an ecosystem can support (Primack 2006).

Wildlife species found on the agricultural land in the Study Area are those that feed on crops. Examples are terrestrial species, such as white-tailed deer (*Odocoileus virginianus*), rabbits (*Sylvilagus floridanus*), mice (*Mus* pp.), and avian species such as crows (*Corvus brachyrhynchos*) and pheasants (*Phasianus colchicus*) (NGPC 2015a). Agricultural land has a low carrying capacity for wildlife.

There are wildlife species that can be found in both emergent and forested wetlands; they include species like crayfish (*Cambarus* spp.), and various species of frogs, snakes, and turtles (see the species list in the following Reptiles and Amphibians section). However, the presence of wildlife species in wetlands varies due to changes in wetland hydrology conditions from season to season. Information regarding specific wetland types in the Study Area is provided in Section 3.5, Wetlands and Waters of the U.S.

In 2007, NGPC conducted a roadkill survey along N-12 near Niobrara State Park (see Table 3-1). This survey identified different types of animals killed between May and August 2007 and gives a good representation of wildlife using the surrounding areas. However, this survey is a snapshot of a short period and does not offer a full representation of annual roadkill numbers. Predators and scavengers are a confounding factor for this survey, as it is not possible to know how many roadkill carcasses are removed by predators before they can be detected by surveyors. The wildlife identified in the survey consisted of white-tailed deer, raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*, likely), opossums (*Didelphis virginiana*), turtles (species unknown), and the occasional muskrat (*Ondatra zibethicus*) or beaver (*Castor canadensis*). The majority of the wildlife was found along sections of the road that were surrounded by wetland habitat.

**Table 3-1  
N-12 Roadkill Survey May to August 2007**

Date	Species <sup>1</sup>	General Habitat <sup>2</sup>
May 26, 2007	White-tailed deer (doe) – 1 Painted turtles – 2 Muskrat – 1 Raccoon – 1	None noted for all
June 6, 2007	Muskrat – 1 Raccoon – 2 White-tailed deer (doe) – 1 Beaver – 1	Cattail wetland Cornfield, wetland Wooded area and wetland Wetlands, dam 100 yards north

Date	Species <sup>1</sup>	General Habitat <sup>2</sup>
June 29, 2007	Raccoon – 1 White-tailed deer (doe) – 1 White-tailed deer (fawn buck) – 1	Wetlands None noted None noted
July 10, 2007	White-tailed deer (doe) – 2 Raccoon – 2 Turtle – 1	Wetlands, pasture Wetlands Wetlands
July 23, 2007	Opossum – 1 Raccoon – 1 Skunk – 1 White-tailed deer (fawn) – 1	River Wetlands Wetlands Wetlands
August 8, 2007	Raccoon – 6 White-tailed deer (fawn) – 2 Skunk – 1 Muskrat – 1	Wetlands Wetlands Wetlands Wetlands
August 18, 2007	Beaver – 1	Wetlands
August 21, 2007	White-tailed deer (fawn) – 2 Raccoon – 1	Creek, wetlands Wetlands
August 28, 2007	White-tailed deer (fawn) – 1 Raccoon – 1	Wetlands Wetlands

Notes:

<sup>1</sup> Species-specific information was not included in the report. For example, it is not known which species of skunk was found.

<sup>2</sup> Habitat as described in the report. No further information was included.

Source:

Eberly, R. 2007. Niobrara Hwy 12, Road Kill Survey. Email communication from Carey Grell, NGPC to Meagan Hall, HDR. March 25, 2009.

### Mammals

A survey of the MNRR conducted by NPS identified 48 species of mammals; any of these species could potentially exist in or near the Study Area. Small mammals, including mice, voles (*Microtus* spp.), bats, moles (*Talpa* spp.), rats (*Rattus* spp.), and ground squirrels (*Poliocitellus franklinii*), made up roughly 60 percent of these species. Larger mammals contributed an additional 20 percent. Mule deer (*Odocoileus hemionus*), white-tailed deer, and mountain lions (*Puma concolor*) are the only large mammals in the Study Area, with white-tailed deer abundant within the Study Area and found throughout the length of the recreational rivers and adjacent bluffs. Mountain lions are listed on the MNRR species list as present within the MNRR boundaries, but are cited as being rare. Coyote, red fox, and badger are cited as common. Other small, fur-bearing animals include raccoon, mink (*Neovision vision*), weasel (*Mustela* spp.), muskrat, opossum, beaver, and rabbit. Bobcat (*Lynx rufus*) may be present within the MNRR boundaries, although there have been no confirmed reports (NPS 1999). No river otters were confirmed within the MNRR from the NPS mammals list; however, the 2010/2011 NGPC fur harvester surveys reported confirmed river otter locations along the lower Niobrara River, near the confluence of the Missouri River (Wilson 2011). North American river otters (*Lutra canadensis*) were released on the Niobrara River in 1991 near Merriman, Nebraska, and have since migrated throughout the Niobrara River valley.

### Birds

The Missouri River, along the northern edge of Knox County, is home to 25 year-round resident bird species, 58 species that use the river for nesting, 15 species that are winter residents, 115 species that are spring migrants, and 110 species that are fall migrants (NPS 1999). The Missouri River

ecosystem is a significant pathway for migratory birds, including a number of passerines and birds of prey. Migrating species use the river bottomland, grasslands, and wooded bluffs, which serve as wintering, feeding, breeding, and staging grounds (NPS 2010a). Migratory birds are known to use portions of the Study Area for nesting, which occurs primarily between April 1 and July 15. In addition, migratory birds may nest on bridge structures, such as the N-12 bridge over Bazile Creek. Migratory birds are protected under the MBTA (16 USC 703-712, as amended). Common Central Flyway species include spotted sandpiper (*Actitis macularia*), red-winged blackbird (*Agelaius phoeniceus*), great blue heron (*Ardea herodias*), Canada goose (*Branta canadensis*), American white pelican (*Pelecanus erythrorhynchos*), double-crested cormorant (*Phalacrocorax auritus*), and pied-billed grebe (*Podilymbus podiceps*). Common shorebirds include killdeer (*Charadrius vociferus*), avocets, interior least tern, and piping plover. Ring-billed gulls (*Larus delawarensis*) and Franklin's gulls (*Larus pipixcan*) are also common (Corps 2004).

The MNRR is home to many species of waterfowl and shorebirds, including multiple species of geese, ducks, herons, bitterns, pelicans, avocets, plovers, sandpipers, gulls, terns, and kingfishers. Birds of prey include eagles, hawks, vultures, osprey, falcons, and owls. Other species that would be expected along the river include doves, woodpeckers, swallows, blackbirds, and sparrows. The interior least tern, which is federally and state listed as endangered, and the piping plover, which is federally and state listed as threatened, nest on open sandbars within the Missouri and Niobrara rivers. Additional information on interior least terns and piping plovers is provided in Section 3.3, Protected Species.

NGPC 2013 Midwinter Bald Eagle Survey results indicate that bald eagles occur on a frequent and regular basis within and near the Study Area. The survey counts numbers of individuals along major watercourses and at large reservoirs at a target date (January 1 through 15) and segments the river stretches by major landmarks (usually bridges). While numbers fluctuate widely from year to year in response to weather, results from the surveys reflect the general trend of increasing numbers. Because the Missouri River area is mainly used during migration and winter roosting, the number of bald eagles is dependent on the conditions such as ice cover, water levels, and available roosting habitat (Dinan and Jorgensen 2013). NGPC counts eagle nests within the state; in 2014, there were 111 documented active bald eagle nests in Nebraska (Jorgensen and Dinan 2014). The NNHP Database was consulted regarding occurrences of bald eagle nest sites within 0.5 mile of the Study Area. Two nests have been recorded near the Study Area. One nest is located near the N-12 bridge over the Niobrara River, and the other nest is located along the Missouri River, upstream of its confluence with the Niobrara River (NGPC 2010a).

### **Reptiles and Amphibians**

A 2003 survey of reptiles and amphibians in the MNRR, including portions of the Study Area, found the following species: northern cricket frog (*Acris crepitans*), Woodhouse's toad (*Bufo woodhousii*), smooth softshell turtle (*Apalone mutica*), six-lined racerunner (*Aspidozelis sexlineata*), common snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*), ringneck snake (*Diadophis punctatus*), western fox snake (*Elaphe vulpina*), false map turtle (*Graptemys pseudogeographica*), eastern hognose snake (*Heterodon platirhinos*), Cope's gray treefrog (*Hyla chrysoscelis*), bullfrog (*Lithobates catesbeiana*), northern leopard frog (*Rana pipiens*), bullsnake (*Pituophis melanoleucus*), western chorus frog (*Pseudacris triseriata*), Plains garter snake (*Thamnophis radix*), common garter snake (*Thamnophis sirtalis*), and racer. Species expected, but not found during the survey are as follows: tiger salamander (*Ambystoma tigrinum*), spiny softshell turtle (*Apalone spinifera*), Great Plains toad (*Bufo cognatus*), northern prairie skink (*Eumeces septentrionalis*), western hognose snake (*Heterodon nasicus*), milk snake (*Lampropeltis triangulum*), Northern water snake (*Nerodia sipedon*), plains leopard frog (*Rana blairi*), and plains spadefoot toad (*Spea bombifrons*). The reptile

and amphibian study noted that surveys of river islands found only species of frogs, toads, and turtles (Fogell and Cunningham 2005). A study performed by Keith Perkins and Doug Backlund (2000) found that softshell turtle nests were common on inter-channel sandbars in the Missouri River.

An amphibian and turtle survey was conducted in the summers of 2010 through 2012 by USD within the 39-Mile District of the MNRR in the wetlands and river directly adjacent to the project, in the Niobrara River delta, and downstream in the Lake delta. This survey identified the following amphibian species within the wetlands from the Niobrara River confluence to the Lake delta: northern cricket frog, Woodhouse's toad, American bullfrog (*Rana catesbeiana*), northern leopard frog, and boreal chorus frog (*Pseudacris maculata*). Spiny softshell, snapping, painted, and false map were the species of turtles identified during this survey (Kerby and Swanson 2013).

### 3.3 PROTECTED SPECIES

T&E species include plants, wildlife, and fish species listed as threatened, endangered, or candidates for listing under the ESA. Also included in this section are species listed as state threatened or endangered by NGPC and birds protected under the BGEPA and the MBTA. A detailed description of protected species expected to occur in the Study Area is provided in the Protected Species Technical Memorandum (Appendix E).

The Study Area for reviewing impacts on threatened or endangered wildlife and plant species for the Project extends west to the town of Verdel and east to the intersection of N-12 and County Road 531. The Study Area extends to the north of the current alignment of N-12 and to the south of the bluffs alignment. The Study Area includes all Action Alternative alignments and adjacent habitats (see Figure 3-1, Sites of Interest in or Near the Study Area).

The Study Area for reviewing impacts on threatened or endangered fish and mussels includes all water bodies potentially affected by the Action Alternatives. The water bodies include Bazile Creek, Ponca Creek, Harry Miller Creek, Medicine Creek, other unnamed tributaries to the Missouri River, and the floodplain wetlands that are connected to the Missouri River. The Missouri River main channel and the Niobrara River are not located within the ROW of any of the Action Alternatives. However, species that are found in the Missouri and Niobrara rivers were included in the evaluation of potential effect due to their proximity to the Study Area and their ability to move to and from the rivers and their floodplains.

#### 3.3.1 Regulatory Framework

As discussed in Chapter 1.0, the federally listed T&E species are protected under the ESA (16 USC 1531 et seq.). The ESA provides for the protection of animal and plant species determined to have a declining population and to be in jeopardy of becoming extinct. USFWS has the authority of the federal government to administer the protection of such species. Specifically Section 7 of the ESA, called Interagency Cooperation, is the mechanism by which federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species. Under Section 7 of the ESA, federal agencies must consult with USFWS when any action the agency carries out, funds, or authorizes (such as through a permit) may affect a listed threatened or endangered species. This process usually begins as informal consultation. A federal agency, in the early stages of project planning, approaches USFWS and requests informal consultation. Discussions between the two agencies may include what types of listed species may occur in the proposed action area, and what effect the proposed action may have on those species.

If the federal agency, after discussions with USFWS, determines that the proposed action is not likely to affect any listed species in the project area, and if USFWS concurs, the informal consultation is complete and the proposed project moves ahead. If it appears that the agency's action may affect a

listed species, that agency may then prepare a biological assessment to assist in its determination of the project’s effect on a species (USFWS 2015a). In addition, consideration of federal species of concern and former candidate species is required under the Wild and Scenic Rivers Act (16 USC 1271-1287).

Some state governments have established laws and regulations providing state agencies with the authority to protect species that occur within their jurisdiction. The state of Nebraska has established the NESCA, which is administered by NGPC. NESCA states that any species listed under the ESA shall also be state-listed (Neb. Rev. Stat. §37-801-11). NGPC has the authority to list any species of wildlife or plants normally occurring within the state as threatened or endangered and subject to NESCA (Neb. Rev. Stat. §37-806-2). NESCA requires state agencies to consult with NGPC and take action necessary to ensure that actions authorized, funded, or carried out by the agencies do not jeopardize the continued existence of listed threatened or endangered species or result in the destruction or modification of habitat of such species that are determined by NGPC to be critical (Neb. Rev. Stat. §37-807-3).

In compliance with the ESA and other applicable federal and state laws, the Corps has initiated coordination and consultation activities with USFWS and NGPC. See Section 3.2.1, above, for information on BGEPA and MBTA.

### 3.3.2 Federally and State-listed Threatened or Endangered Species

Based on information provided by federal and state agencies, several potential T&E species may exist in the Study Area. USFWS provided the Corps with an updated list of species that are federally listed as T&E species and of designated critical habitat that might occur within or near the Study Area (2015d). In addition, NGPC provided the Corps with an updated list of state-listed species that could potentially occur within or near the Study Area (2015b).

Table 3-2 lists the species identified by USFWS and NGPC, their threatened or endangered status, their typical habitat, and their occurrence.

**Table 3-2  
Threatened and Endangered Species that May Occur in the Study Area**

Common Name	Scientific Name	Status <sup>1,2</sup>	Typical Habitat	Occurrence
<b>Birds</b>				
Bald eagle <sup>3</sup>	<i>Haliaeetus leucocephalus</i>	Protected under BGEPA	Mature riparian areas along streams, rivers, and permanent bodies of water	Winter roosting and nesting along the Missouri River, Niobrara River, and Lewis and Clark Lake; two nests recorded near the Study Area
Interior least tern	<i>Sterna anatillarum</i>	Endangered	Sparsely vegetated sandbars, sand and gravel shorelines of rivers, alkali wetlands	Migration, summer breeding, nesting on sandbars in Missouri and Niobrara rivers; has been noted using wetlands within the Study Area for foraging

Common Name	Scientific Name	Status <sup>1,2</sup>	Typical Habitat	Occurrence
Piping plover	<i>Charadrius melodus</i>	Threatened	Sparsely vegetated sandbars, sand and gravel shorelines of rivers, alkali wetlands	Migration, summer breeding, nesting on sandbars in Missouri and Niobrara rivers; no known occurrences within the Study Area
Rufa red knot	<i>Calidris canutus rufa</i>	Threatened	Migratory stopovers include sandflats or mudflats	Migration on Missouri River is possible; no known occurrences within the Study Area
Whooping crane	<i>Grus americana</i>	Endangered	Spring and fall migration through central flyway, along Missouri and Niobrara Rivers, cropland and pasture, wet meadows, shallow marshes, and shallow areas in rivers, lakes, reservoirs, and stock ponds	Within the tributaries and wetlands located in the Study Area; no known occurrences within the Study Area
<b>Insects</b>				
American burying beetle	<i>Nicrophorus americanus</i>	Endangered	Riparian zone, mixed agricultural land (pastures and mowed land), grasslands, woodland edge habitat	Western Knox County; no known occurrences within the Study Area
<b>Fish</b>				
Pallid sturgeon	<i>Scaphirhynchus albus</i>	Endangered	Main channel of turbid free-flowing rivers, backwaters, chutes, edges of sandbars	Missouri River, lower reaches of Niobrara River ; no known occurrences within the Study Area
Lake sturgeon	<i>Acipenser fulvescens</i>	State-listed as endangered; Federal species of concern	Main channel of turbid free-flowing rivers, backwaters, chutes, edges of sandbars	No known occurrences within the Study Area
Sturgeon chub	<i>Macrhybopsis geliba</i>	State-listed as endangered; Federal species of concern	Main channel of turbid free-flowing rivers, backwaters, chutes, edges of sandbars	Missouri River downstream of Gavins Point Dam; no known occurrences within the Study Area
<b>Mammals</b>				
North American river otter	<i>Lutra canadensis</i>	State-listed as threatened	Wooded rivers and streams with sloughs and backwaters, ponded water areas, year-round open water with rock, brush, and log piles	Niobrara River, upstream of the confluence with the Missouri River; no known occurrences within the Study Area

Common Name	Scientific Name	Status <sup>1,2</sup>	Typical Habitat	Occurrence
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened	Summer colony habitat underneath bark, in cavities or in crevices of both live trees and snags (dead trees)	No known occurrences in the Study Area; listed by USFWS in the county
<b>Plants</b>				
Small white lady's slipper	<i>Cypripedium candidum</i>	State-listed as threatened	Moist to wet sedge-meadows, wet prairies, wet-mesic tallgrass prairie	No known occurrences within the Study Area
Western prairie fringed orchid	<i>Platanthera praeclara</i>	Threatened	Wet-mesic to mesic tallgrass prairie, unplowed, sedge meadows.	No known occurrences within the Study Area

*Notes:*

BGEPA = Bald and Golden Eagle Protection Act

USFWS = U.S. Fish and Wildlife Service

<sup>1</sup> Federal and state (Nebraska) status unless otherwise noted.

<sup>2</sup> Species of concern is an informal term that refers to those species that USFWS believes might be in need of concentrated conservation actions. Such conservation actions vary depending on the health of the populations and degree and types of threats. Species of concern receive no legal protection (USFWS 2009a).

<sup>3</sup> This species is not federally listed as threatened or endangered under Section 7 of the Endangered Species Act; however, this species is federally protected under the Bald and Golden Eagle Protection Act (16 USC 668a-d).

*Sources:*

NatureServe. 2015. "NatureServe Explorer: An Online Encyclopedia of Life" [web application]. Version 7.1. Arlington, Virginia: NatureServe. <http://www.natureserve.org/explorer>.

NGPC. 2014. *Estimated Current Ranges of Threatened and Endangered Species: List of Species by County*. Nebraska Natural Heritage Program. March. <http://outdoornebraska.ne.gov/wildlife/programs/nongame/pdf/TandESpecies.pdf>.

USFWS. 2015b. *Endangered, Threatened, Proposed and Candidate Species, Nebraska Counties*. Nebraska Field Office. March. <http://www.fws.gov/nebraskaes/Library/NECounty2015.pdf>.

For each species federally and state-listed as threatened, endangered, or candidate species that may occur in the Study Area, the species occurrence, history, and habitat requirements were reviewed from current research reports, census reports, management and recovery plans, and conservation assessments. In addition, the NNHP Database was consulted for records of species occurrence within the Study Area (NGPC 2015c).

The following sections provide a description of the habitat requirements, distribution, and breeding and foraging behavior of these species. Only species potentially occurring in or near the Study Area are discussed in this section. Complete descriptions of all federally and state threatened, endangered, and candidate species potentially occurring in Knox County are provided in the Protected Species Technical Memorandum (see Appendix E).

### **Bald Eagle**

The bald eagle is a protected species under the BGEPA and the MBTA. On July 9, 2007, USFWS formally removed the bald eagle from the federal list of threatened or endangered species (72 FR 37345-37372), and in October 2008, the bald eagle was formally removed from the Nebraska

threatened or endangered species list. There have been no critical habitat designations for the bald eagle. Consequently, none of the land within the Study Area is considered critical habitat.

Bald eagles can generally be found statewide in Nebraska but tend to occur most frequently along streams, rivers, and other permanent bodies of water, using mature riparian timber to perch while feeding and loafing. Migrating and wintering eagles may be found in Nebraska between November 1 and April 1. The Missouri River is a major wintering area for the bald eagle.

Habitat supporting the bald eagle is characterized by aquatic ecosystems. The bald eagle must have access to lakes, reservoirs, major rivers, and select seacoast habitats that have an abundant source of food, including fish, rabbits, turtles, snakes, other small mammals, and carrion, and that have adjacent riparian areas with large mature trees suitable for nesting and roosting (USFWS 2007).

In North America, eagles migrate both north and south during the yearly climatic changes associated with the seasons of the year. The distance of migration depends on the severity of the winter climatic conditions and subsequent available habitat for feeding. The bald eagle is associated with the Missouri River during annual migrations and throughout the winter where open water is present. The southward migration of bald eagles begins as early as October, and the wintering period extends from December to March.

During the winter, the bald eagle feeds on fish in open water areas created by dam tailwaters; in the warm effluents of power plant, municipal, and industrial discharges; or in power plant cooling ponds. The Missouri River floodplain is a major wintering area for the bald eagle due to the presence of large dead or dying cottonwood trees located along the banks of the river. Wintering eagles are most abundant along the mainstem of the Missouri River. The frequency and duration of bald eagle use of these areas depends on the weather conditions and presence of ice. Bald eagles nest in Nebraska from mid-February through mid-August. They tend to nest in large trees with specific size and structure characteristics. Bald eagles usually nest in the same territories each year, often using the same nest repeatedly.

The NGPC 2013 Midwinter Bald Eagle Survey results indicate that bald eagles occur on a frequent and regular basis within and near the Study Area. The survey counts numbers of individuals along major watercourses and at large reservoirs on a target date (January 1 through 15) and segments the river stretches by major landmarks (usually bridges). Although numbers fluctuate widely from year to year in response to weather, results of the surveys reflect the general trend of increasing numbers. Because the Missouri River area is mainly used during migration and winter roosting, the number of bald eagles is dependent on the conditions, such as ice cover, water levels, and available roosting habitat (Dinan and Jorgensen 2013). NGPC counts eagle nests within the state. In 2014, there were 111 documented active bald eagle nests in Nebraska. A collection of the nests were documented along the Missouri River and near the confluence of the Niobrara and Missouri rivers (Jorgensen and Dinan 2014). Overall trends for bald eagle populations are positive and continue to increase (Steenhof et al. 2008).

### *Interior Least Tern*

The interior population of the least tern was federally listed as endangered on May 28, 1985 (50 FR 21784-21792). On April 22, 2008, USFWS initiated a 5-year review of this species (73 FR 21643-21645). No critical habitat has been designated for the interior least tern.

The interior least tern occurs on the rivers in the vicinity of the Study Area. This species nest from mid-April to mid-August. Interior least terns nest in colonies on sand islands and sandbars in rivers. A key factor for nest site selection is continuous exposure of the site above water for at least 100 days during the nesting period (Smith and Renken 1993). Suitable nesting locations contain little

vegetation (less than 10 percent), with the vegetation present being less than 4 inches tall (Dirks et al. 1993).

Interior least terns occur near the Study Area only during the breeding and nesting season (from April to August). Several interior least tern nesting colonies are known to occur on the Missouri River between Fort Randall Dam and the Lake (Corps 2009c). Interior least terns nest along the Niobrara River between Spencer Dam and the confluence with the Missouri River (NPS 2009c).

Interior least tern populations have been monitored annually by the Corps along the Missouri River since 1986 and along the Niobrara River by NPS since 2003. Continued annual monitoring efforts take place every summer when the birds are breeding and nesting on the rivers.

Although no current studies of these species are occurring within the Study Area, several ongoing studies on interior least terns and piping plovers are occurring within the Missouri River in association with the U.S. Fish and Wildlife Service 2003 Amendment to the 2000 Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project, and Operation of the Kansas River Reservoir System (USFWS 2003a).

As described in the U.S. Fish and Wildlife Service 2003 Amendment to the 2000 Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Missouri River Bank Stabilization and Navigation Project, and Operation of the Kansas River Reservoir System (USFWS 2003a), the Study Area is located in a Species Management Priority Area for the interior least tern. The Corps' Emergent Sandbar Habitat (ESH) Program created 137 acres of nesting habitat for interior least terns and piping plovers from September 2008 through April 2009 within the Lake segment of the Missouri River (river mile [RM] 827) (Corps 2010). Planned construction of ESH in 2010 was precluded due to high river stages and discharges throughout the construction season (Corps 2011c). The flood of 2011 created thousands of acres of ESH throughout the Missouri River, and no mechanical sandbar construction occurred. The Corps transitioned ESH funding to monitoring efforts for the Missouri River Recovery Program and no additional ESH construction has taken place since 2009 (Corps 2012a).

### ***Rufa Red Knot***

The rufa red knot (*Calidris canutus rufa*) is a shorebird that was federally designated as threatened on December 9, 2014 (50 CFR 17). The rufa red knot migrates annually between its breeding grounds in the Canadian arctic and its wintering regions in the southeast United States, northeast Gulf of Mexico, northern Brazil, and the Tierra del Fuego in South America. Rufa red knots use staging and stopover areas in the continental United States and Canada in its spring and fall migrations (50 CFR 17). Migratory stopovers are typically coastal zones that contain sandflats or mudflats. The species frequents peat-rich banks, salt marshes, brackish lagoons, mangrove areas, and mussel beds. In these areas, the birds feed on mollusks, crustaceans, and other invertebrates (Government of Canada 2015). Rufa red knots winter and migrate in large flocks and when they arrive at stopovers very thin, sometimes emaciated due to the long distances in flight. They eat constantly to gain enough weight to continue their migration, nearly doubling their weight at some stopovers (USFWS 2013). USFWS has records of rufa red knot occurring in Knox County and the bird is protected wherever found (USFWS 2015b).

### ***Whooping Crane***

The whooping crane was federally listed as endangered on March 11, 1967 (32 FR 4001), and critical habitat was designated for this species on May 15, 1978 (43 FR 20938-20942). The critical habitat for this species is located along a 56-mile-long, 3-mile-wide stretch of the Platte River between

Lexington and Shelton, Nebraska (Canadian Wildlife Service and USFWS 2007). The critical habitat is located approximately 145 miles southwest of the Study Area.

Whooping cranes can be found in South Dakota and Nebraska during fall and spring migrations. Whooping cranes migrate through South Dakota and Nebraska between early October and late November in the fall and mid-March to late May in the spring. A variety of habitats are used during migration, such as croplands and wetlands for feeding and shallow portions of rivers, lakes, and streams for roost sites (Austin and Richert 2005). Overnight roosting requires shallow water over submerged sandbars on which the cranes stand and rest. This species has shown a preference for unobstructed channels that are isolated from human disturbance (Armbruster 1990, as cited in Canadian Wildlife Service and USFWS 2007). Large palustrine wetlands are used for roosting and feeding during migration.

Today, most whooping cranes migrate from Wood Buffalo National Park in Canada to Aransas National Wildlife Refuge on the Texas coast. This route passes southeast through northeastern Alberta, Canada, south-central Saskatchewan, Canada, northeastern Montana, western North Dakota, western South Dakota, central Nebraska, central Kansas, west-central Oklahoma, and east-central Texas. Scattered occurrences have been reported in adjacent states and provinces (Canadian Wildlife Service and USFWS 2007).

The migration path of the Aransas-Wood Buffalo flock that nests in northern Canada and migrates to the Gulf of Mexico passes through central Nebraska, mainly in the Platte River basin. Knox County is on the eastern edge of the main whooping crane migration corridor. No sightings have been confirmed within the designated MNRR, but a single whooping crane has been sighted in Knox County along Bazile Creek south of the Study Area, which is fairly unusual because it is east of the central flyway (USFWS 2009b). No studies for this species are being conducted within the Study Area.

### *American Burying Beetle*

The ABB was federally listed as endangered on July 13, 1989 (54 FR 29652-29655). On January 29, 2007, USFWS initiated a 5-year review of this species (72 FR 4018-4019), which was completed and summarized in March 2008 (USFWS 2008). No critical habitat has been designated for this species.

ABBs are active from late April through September (USFWS 1991). This species is nocturnal and is generally active only when nighttime temperatures exceed 60 degrees Fahrenheit for several consecutive days. The ABB is attracted to carrion anywhere in South Dakota or Nebraska with significant topsoil suitable for burying of carrion, on which it is dependent for food and reproduction. Optimal carrion size has been found to range between 3.5 to 7.0 ounces (USFWS 1991). The ABB is one of the largest carrion beetles and is a strong flier, which enables it to move great distances.

Although the ABB's habitat is not clearly defined, captures suggest the possibility of riparian woodlands, mixed agricultural lands (including pastures and mowed fields), and grasslands (Ratcliffe and Jameson 1992). Habitats where ABBs occur in Nebraska consist of grassland prairie, forest edges, open woodlands with grasslands, and scrubland (USFWS 2008). Recent research suggests that ABBs are more of a generalist species, using a wider range of habitats than other burying beetles, and that the presence of appropriate soil for carcass burial is more important than habitat type. No strong correlations with soil type or land use have been identified for this species in Nebraska (Bishop et al. 2002); however, adequate soil moisture levels appear critical (Hoback 2009). Hoback's laboratory and field studies have shown that burying beetles, including ABBs, will seek and use moist soils during periods of inactivity.

ABBs have been found in the sandhills of north central Nebraska where there is sufficient carrion, even though sandy soils may make carcass burial difficult (Ratcliffe and Jameson 1992). The species was collected in 1993 and 1994 in Dawson, Lincoln, Keya Paha, and Cherry counties in Nebraska and has been identified in Tripp and Gregory counties in South Dakota, but no confirmed sightings have been made along the 39-Mile District of the MNRR (NPS 1997). Numerous surveys have been conducted along the Missouri River in South Dakota, and all have failed to detect this endangered ABB. The only extant population known in South Dakota is in southwest Gregory and southern Tripp counties, approximately 100 miles west of Yankton (South Dakota Game, Fish and Parks [SDGFP] 2015). Given the proximity of collections in Keya Paha and Antelope counties and that this species is a strong flier and can travel long distances in search of carrion, they may be present in suitable habitats (USFWS 1991). At this time, any habitat in Nebraska with significant topsoil suitable for burying carrion is considered potential ABB habitat. The bluff areas along the river floodplain could potentially contain the most appropriate habitat for the ABB within the Study Area.

#### *North American River Otter*

The North American river otter is a long, slender, partially aquatic mammal. This species was state-listed as endangered in 1980 and was down-listed to threatened in 2005 after a series of successful reintroductions. Because it is not a federally listed threatened or endangered species, the presence or absence of this species is not subject to Section 7 of the ESA requirements for consultation with USFWS.

NGPC released river otters at seven sites between 1986 and 1991, including sections of the Niobrara River in Sheridan County, Nebraska. Recent observations suggest that river otters have become established in several Nebraska watersheds. Otters are highly mobile, moving in response to food availability or environmental conditions, making home range size and location extremely dynamic. This species requires a large amount of space to meet their annual requirements. At any given time, otters may occupy only a few miles of stream, but will often move from one area to another.

River otters are social animals that hunt and travel together, using the same resting sites, latrines, and dens. This species is active year-round and does not migrate. Breeding can occur in March and April but is extremely variable. Breeding may take place on land or in water and may occur anywhere within the female's home range. Females give birth and rear young in abandoned dens of other aquatic mammals. Natal dens may occasionally be found up to a few hundred feet from water.

#### **What are Class A state resource waters?**

Class A state resource waters are waters of very high quality or having unique features that have been recognized by society that are within national or state parks, wildlife refuges, or wild and scenic river systems.

#### **What are designated beneficial uses?**

A designated beneficial use is any use of surface waters where water quality can affect the use.

Beneficial uses include aesthetics, agricultural water supply, public drinking water supply, recreation in and on the water, and support and propagation of fish and other aquatic life, as follows.

*Aesthetics* – Water quality should provide that the water is pleasing to visual and olfactory senses.

*Agricultural water supply Class A* – Water quality should be suitable for irrigation or livestock watering without treatment.

*Public drinking water supply* – Water quality should be suitable for use by community water supply systems as a source for drinking water after the water is put through a treatment process.

*Recreation* – Water quality should be suitable for activities in and on the water such as swimming, skiing, canoeing, wading, and scuba diving. These are activities where the body comes into prolonged or intimate contact with the water.

*Warmwater aquatic life Class A* – Water quality should support a year-round warmwater fishery that consists of larger species, including game fish, along with smaller forage fish. (NDEQ 2006)

The river otter's diet consists primarily of fish, but may also include crustaceans, mollusks, insects, birds, and small mammals. Bobcat, mountain lion, gray wolf, red fox, and bald eagles have been reported as predators to river otters. Threats to the river otter include destruction and degradation of habitat, water pollution, human settlement and recreational use of riparian areas, and incidental trapping and illegal take (Boyle 2006).

Currently, there are no known populations of North American river otters in the Study Area. This species was included because they are a highly mobile species and documented sightings have occurred several miles upstream of the confluence of the Niobrara and Missouri rivers (NGPC 2010a). The Niobrara River drains into the Missouri River and could be a possible conduit for movement of river otters into portions of the Study Area that connect to the Missouri River.

#### ***Northern Long-Eared Bat***

The northern long-eared bat (*Myotis septentrionalis*) was federally listed as threatened on May 4, 2015 (80 FR 17974-18033). No critical habitat has been designated for this species.

The northern long-eared bat is found throughout the eastern two-thirds and along the northern portion of Nebraska (USFWS 2015b). During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags. Females typically roost from late May to early June to late July. Males and non-reproductive females may also roost in cooler places, such as caves and mines. This bat has been found rarely roosting in structures, such as barns and sheds (USFWS 2015c).

There are no known records of northern long-eared bats in Knox County, but there are records in the neighboring Holt County (NatureServe 2014). There is potential for the bat to roost in the woodlands located within the Study Area.

### **3.4 WATER QUALITY**

The project occurs in an area with surface water and groundwater interactions; therefore, the project has the potential to affect surface water and groundwater in the Study Area. The project is located in the Ponca, Lower Niobrara, and Lewis and Clark Lake watersheds. Water quality is addressed for the Study Area shown in Figure 3-1 as well as downstream areas of the three watersheds outside of the Study Area. The Study Area was considered in context of the three watersheds for the alternative's potential affects downgradient in the watershed.

#### **3.4.1 Surface Water**

Surface water quality is protected through several acts and regulations. Section 303(d) of the Clean Water Act requires states, territories, and authorized tribes to identify waters for which existing required pollution controls are not stringent enough to maintain applicable water quality standards and to establish total maximum daily loads (TMDLs) for the pollutants impairing those waters (33 USC 1251 et.seq.). Section 305(b) of the Clean Water Act requires states to submit to EPA a biannual report on the overall water quality status within their states and the degree to which waterbodies support their designated uses (33 USC 1315). The information maintained by states in accordance with Section 303(d) of the Clean Water Act serves as a portion of the Section 305(b) of the Clean Water Act water quality report (NDEQ 2014 and SDDENR 2014).

Title 117 of NDEQ guidelines (Nebraska Surface Water Quality Standards) and the Administrative Rules of South Dakota (ARSD 74:51:01:02, and :03) lists waterbodies and their beneficial uses. In addition, Title 117 of NDEQ guidelines identifies numeric criteria that provide standards for protection of an assigned beneficial use and for quantifying allowable pollutant levels. Information

maintained by Nebraska in accordance with Title 117 of NDEQ guidelines and South Dakota through ARSD is used to meet the requirements of Section 303(d) of the Clean Water Act.

Six surface waters and their associated unnamed drainageways are located in the Study Area (from west to east): the Missouri River, Ponca Creek, Harry Miller Creek, Medicine Creek, Bazile Creek, and the tailwaters of the Lake. Although the Niobrara River is near the Study Area, it would not be affected by the project. The surface waters in the Study Area are located in three watershed subbasins designated by NDEQ: Missouri Tributaries River Basin (MT2) and Niobrara River Basins (NI1 and NI2). The surface waters, along with their designated uses and water quality, are discussed in the following sections.

### *Missouri River*

The Missouri River between Lake Francis Case and the Lake is a remnant unchannelized section that is 47 miles long and displays a moderate to high degree of braiding with frequent sandbars and islands. In this section of the river, channel widths range from 985 to 7,450 feet (approximately 0.2 to 1.4 miles), with an average width of 2,690 feet (0.5 mile). High bluffs occur along most of this section, and the channel is incised with banks 10 to 50 feet below the adjacent floodplain. Below its confluence with the Niobrara River, the Missouri River becomes increasingly braided in the transition zone between the riverine portion of this section and the Lake (Elliott, Jacobson, and DeLonay 2004).

When the Fort Randall and Gavins Point dams were constructed, the Missouri River water quality factor most affected was turbidity. The water became less turbid, or much clearer, after the dams reduced natural sediment transport in the river. High turbidity did not affect the primary energy source of the river, the erosion caused by main channel meandering, or the runoff from tributaries. The water with significantly reduced sediment load discharged from the dams leads to downcutting, narrowing of the river channel, rapid erosion on the new banks, loss of sandbars, and reduction of nutrients important to fish and wildlife habitat (NPS 2009b).

Because the Missouri River is the state line between Nebraska and South Dakota, the waters of the river are subject to the jurisdiction of both states. In Nebraska, NDEQ designates two segments of the Missouri River within the Study Area: Nebraska-South Dakota border to Niobrara River and Niobrara River to Big Sioux River. The Nebraska-South Dakota border to Niobrara River segment is classified as a Class A state resource water and has designated beneficial uses of recreation, Class A warmwater aquatic life, Class A agricultural water supply, and aesthetics. The Niobrara River to Big Sioux River segment is classified as a Class A state resource water and has designated beneficial uses of recreation, Class A warmwater aquatic life, public drinking water supply, Class A agricultural water supply, and aesthetics (NDEQ 2014). In South Dakota, the designated segment of the Missouri River in the Study Area extends from the Iowa border to the Big Bend Dam (near Fort Thompson, South Dakota). The beneficial uses are domestic water supply waters, warmwater permanent fish life propagation, immersion recreation, limited-contact recreation, and commercial and industrial waters (ARSD 2014)

Because the Missouri River in both segments is classified as a Class A state resource water, protection under the Antidegradation Clause of Title 117 of NDEQ guidelines is required. The Antidegradation Clause states that existing quality of these surface waters shall be maintained and protected. In addition to the Missouri River channel, surface water overflow wetlands (that is, wetlands with a regular or periodic surface water connection to an adjacent stream or lake) would also carry this classification (NDEQ 2014).

Both Nebraska and South Dakota address the Missouri River segment within the Study Area as Lewis and Clark Lake. See the following for a description of state water uses and water quality classifications.

As previously established, the portion of the Missouri River within the project footprint area is also a component of the National Wild and Scenic Rivers System, and as such, is afforded a higher level of resources protection.

#### *Ponca Creek*

Ponca Creek is located in the northwest corner of the west segment in the Study Area, flowing west to east and eventually joining the Missouri River. Ponca Creek is not listed as a state resource water. Nebraska designated uses for Ponca Creek within the Study Area include recreation, Class A warmwater aquatic life, Class A agricultural water supply, and aesthetics. Nebraska's 2014 Section 303(d) list identifies this segment as an impaired waterway, citing selenium as the parameter of concern (NDEQ 2014).

#### *Harry Miller Creek*

Harry Miller Creek is located in the center of the west segment in the Study Area. This creek appears to originate in the bluffs above the Missouri River and flows north into a wetland complex surrounding N-12. This creek is a minor tributary to the Missouri River. No water quality records were found for Harry Miller Creek.

#### *Medicine Creek*

Medicine Creek is located on the east side of the west segment in the Study Area and flows west to east into the Missouri River. No water quality records were found for Medicine Creek.

#### *Bazile Creek*

Bazile Creek is located on the east side of the east segment in the Study Area and flows south to north into the Missouri River. Bazile Creek is not listed as a state resource water. Nebraska designated uses for the segment of Bazile Creek within the Study Area are recreation, Class A warmwater aquatic life, Class A agricultural water supply, and aesthetics (NDEQ 2009). Nebraska's 2008 Section 303(d) list does not identify this stream as an impaired waterway (NDEQ 2014).

#### *Lewis and Clark Lake*

Lewis and Clark Lake is located behind Gavins Point Dam at RM 811 of the Missouri River. The Lake and dam are used for flood risk reduction, irrigation, navigation, hydropower, water supply, wildlife, and recreation. There are 37 water supply intakes located on the Lake, including 2 municipal water supply facilities, 27 irrigation intakes, 6 domestic intakes, and 2 public intakes. Five of the irrigation intakes and the two public intakes serve the Santee Sioux Tribe Reservation. The largest water use sourced from the Lake is irrigation and the majority of water rights holders sources from the Lake are in Bon Homme County, South Dakota (Corps 2012b). Major tributaries to the Missouri River above the Lake (that is, the Niobrara River and Bazile Creek) are sampled by USGS. Corps personnel collect samples from the lake and water released from the dam six times per year (Corps 2004).

Nebraska designated uses for the Lake include recreation, Class A warmwater aquatic life, public drinking water supply, Class A agricultural water supply, and industrial water supply, and aesthetics (NDEQ 2014). Nebraska's 2014 Section 303(d) list identifies the lake as an impaired waterbody. The waterbody's aquatic life use is impaired for chlorophyll a due to an unknown pollutant (NDEQ 2014).

South Dakota designated uses for the Lake include commerce and industry waters; domestic water supply waters; fish and wildlife propagation, recreation, and stock watering waters; immersion recreation waters; irrigation waters; limited contact recreation waters; and warmwater permanent fish life propagation waters. The South Dakota 2014 Integrated Water Quality Report states that the Lake is currently meeting the water quality standards for all uses, and is not on their Section 303(d) list of impaired waterbody (SDDENR 2014)

### 3.4.2 Groundwater

The underlying aquifer on the Nebraska side of the Missouri River is approximately 0 to 50 feet below ground surface (NDEQ 2007). Therefore, the depth to the water table is near surface elevation.

Due to the lack of any other data source for groundwater quality, public wells were used to identify any potential groundwater quality issues in the Study Area. Nebraska's Wellhead Protection Program is a voluntary program that assists communities and other public water suppliers in preventing contamination of their water supplies. The Nebraska Legislature passed Legislative Bill 1161 in 1998, authorizing the Wellhead Protection Act. There are three wellhead protection areas in the vicinity of the Project; one is located near Niobrara, one is located near Verdel, and one is located south of the Missouri River in the vicinity of Bazile Creek (NDEQ 2010) (see Figure 3-1).

Locations of private groundwater wells were identified using the Nebraska Department of Natural Resources (DNR) database of registered groundwater wells (Nebraska DNR 2010), which includes all registered wells from 1957 to July 2010, and Geographic Information System (GIS) mapping. The well locations are based on global positioning system data, which is accurate within approximately 50 feet. Based on this review, 10 registered wells (six livestock wells, one irrigation well, two domestic wells, and one commercial well) are reportedly within the vicinity of the project (40 CFR 230.50).

The groundwater on either side of the Missouri River in the Study Area historically has not had contamination problems. Niobrara maintains two wells for drinking water and samples are taken frequently for water quality parameters. The water quality parameters tested have been below regulatory levels (Nebraska Department of Health and Human Services 2010). However, two sites with high risk for recognized environmental conditions (RECs) were identified via a review of publically available databases that identify RECs. Both sites have a potential to affect groundwater, but neither of these sites have reported spills causing groundwater contamination. For a detailed discussion of these sites, see Appendix C and Appendix G.

## 3.5 WETLANDS AND WATERS OF THE U.S.

Waters of the U.S., including wetlands, waterways, lakes, natural ponds, and impoundments, are regulated by the Corps under Section 404 of the Clean Water Act, which requires a permit to authorize the discharge of dredged or fill material into waters of the U.S. (33 USC 1344). The Corps Omaha District has jurisdiction over wetlands potentially affected by the project. NDEQ is responsible for Section 401 Water Quality Certification for any project requiring a federal permit or license that includes a discharge into a water of the state on non-tribal lands. EPA is responsible for Tribal 401 Water Quality Certification. In addition, NDEQ determines whether projects comply with Title 117 of NDEQ guidelines (Nebraska Surface Water Quality Standards) (NDEQ 2009). See Chapter 4.0 for a discussion of the permits required for the project.

Executive Order 11990, Protection of Wetlands, requires federal agencies to implement no net loss measures for wetlands (42 FR 26961). These no net loss measures include a phased approach to wetland impact avoidance, then minimization of impacts if wetlands cannot be avoided, and finally mitigation.

The designated Study Area for reviewing impacts on wetlands and waters of the U.S. for the project extends west to Verdel and east to the intersection of N-12 and County Road 531. For the purposes of assessing existing waters of the U.S., each Action Alternative's permanent area of impact was used to identify potential regulatory waters of the U.S. The permanent area of impact is the area of the project that would be changed during construction and not restored to its original state. This includes areas of fills, cuts, channel re-alignments, or other permanent changes to the landscape. Mapping of wetlands and waters of the U.S. for each alternative is available upon request.

### 3.5.1 Wetlands

Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328). The presence of or absence of wetlands in the Study Area was determined by NDOR through wetland determinations (NDOR 2009c). A determination has not been made as to the regulatory status of wetlands under Section 404 of the Clean Water Act.

Wetlands in the Study Area were found to consist of palustrine systems. Palustrine wetland systems include all nontidal wetlands dominated by trees, shrubs, persistent emergents, and emergent mosses and lichens. Palustrine wetland systems are generally bound by uplands or by any other type of wetland system (Cowardin et al. 1979). Four wetland classes within the palustrine system are present in the Study Area: emergent, scrub-shrub, forested, and unconsolidated bottom. Definitions of the wetland classes are as follows (Cowardin et al. 1979):

- Palustrine emergent (PEM) – characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. Emergent wetlands are commonly called marshes, wet meadows, and sloughs.
- Palustrine scrub-shrub (PSS) – characterized by woody vegetation less than 20 feet tall. Scrub-shrub wetlands may represent a successional stage leading to a forested wetland or may be a stable community. Scrub-shrub wetlands are also known as shrub swamps and bogs.
- Palustrine forested (PFO) – characterized by broad-leaved deciduous woody vegetation that is 20 feet or taller. Forested wetlands include riparian, or streamside, areas adjacent to creeks, rivers, and other surface water bodies.
- Palustrine unconsolidated bottom (PUB) – characterized by the lack of large stable surfaces for plant and animal attachment. Unconsolidated bottoms, also referred to in this document as Open Water areas, include all wetland and deepwater habitats with at least 25 percent cover of particles smaller than stones and a vegetative cover of less than 30 percent.

Each wetland system is also characterized by its hydrologic regime. The hydrologic regime equates the duration of ponding or the period during which soil is saturated within 12 inches of the soil surface. The hydrologic regime of wetlands in the Study Area that lie within the Missouri River floodplain range among the following (Cowardin et al. 1979):

- Temporarily flooded (Hydrology Modifier A) – Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for

**What are persistent emergents?**

Persistent emergents are emergent hydrophytes (plants that grow wholly or partly submerged in water) that normally remain standing at least until the beginning of the next growing season.

**What are hydrophytes?**

Hydrophytes grow wholly or partially in water. Water lilies are an example of this type of vegetation.

most of the season. Plants that grow both in uplands and wetlands are characteristic of the temporarily flooded regime.

- Seasonally flooded (Hydrology Modifier C) – Surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the ground surface.
- Semi-permanently flooded (Hydrology Modifier F) – Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the ground surface.
- Intermittently exposed (Hydrology Modifier G) – Water covers the ground surface throughout the year except in years of extreme drought. Vegetation is composed of obligate hydrophytes.

**What are obligate hydrophytes?**

Obligate hydrophytes are species that are found only in wetlands, such as cattail.

Large portions of the Study Area within the Missouri River floodplain consist of palustrine emergent semi-permanently flooded wetlands (PEMF) and palustrine emergent seasonally flooded wetlands (PEMC) that have formed in the Missouri River and the tailwaters of the Lake. These monotypic emergent wetlands are continuously expanding due to sediment deposition from the Missouri River and the expansion of the Lake delta. It is estimated that the Lake delta near Springfield, South Dakota, migrates 550 feet per year and creates between 190 and 210 acres of wetland per year (Corps 2011d).

Outside of the Missouri River floodplain, wetlands are less prevalent; however, wetland areas do occur within the natural drainageways located in the bluffs. These wetlands generally are not exposed to the same level of hydrology as those in the floodplain; therefore, they are generally classified as palustrine emergent temporarily flooded wetlands (PEMA). Wetlands identified in the bluffs also consist of palustrine forested temporarily flooded wetlands (PFOA) and PUB wetlands. Few areas in the bluffs consist of PEMC. Wetlands formed through springs emerging from the slopes in the bluffs were observed in the Study Area. Generally, based on the wetland determination conducted by NDOR in October 2007, the wetlands along the smaller tributaries and in the bluffs drainageways exhibit more vegetative species diversity than the wetlands in the Missouri River floodplain.

Each wetland identified during the wetland determination process was evaluated to ascertain whether it is unique or exceptionally functional using the Floristic Quality Index. The Floristic Quality Index is used to assign a coefficient of conservatism (C), which is a value from 0 to 10 (10 being high) that represents the probability that each vegetative species is likely to occur in natural, undisturbed locations. The Floristic Quality Index evaluation determined that no unique or exceptionally functional wetlands exist in the Study Area. Furthermore, no species were observed that exceeded a value of five (species that persist under moderate disturbance). A project-specific analysis of regionally unique systems (fens, bogs, springs, and playa wetlands) also yielded no findings (NDOR 2009d).

### 3.5.2 Waterways

For purposes of this discussion, waterways include rivers, perennial streams, and intermittent streams. According to current Clean Water Act jurisdictional guidance, and aside from the definition of waters of the U.S. in 33 CFR 328, a waterway is subject to Clean Water Act jurisdiction if the waterway is any of the following (EPA and Corps 2008):

- A traditional navigable water, which would include all the waters described in 33 CFR 328.3(a)(1) and 40 CFR 230.3(s)(1)
- A non-navigable, relatively permanent tributary of a traditional navigable water, where the tributary typically flows year-round or has continuous flow at least seasonally (typically 3 months)
- A non-navigable tributary that is not relatively permanent, but that does contain a significant nexus toward benefiting the chemical, physical, and/or biological integrity of downstream traditional navigable waters

Waterways in the Study Area were determined by identifying perennial and intermittent waterways on USGS 7.5-minute quadrangle topographic maps and aerial photography and during field observations. The Missouri River, Ponca Creek, Harry Miller Creek, Medicine Creek, Bazile Creek, and several small, intermittent waterways (primarily tributaries to the aforementioned surface waters) in the Study Area would be jurisdictional under the Clean Water Act.

### 3.5.3 Lakes, Ponds, and Impoundments

Generally, lakes, ponds, and impoundments are subject to Corps jurisdiction, provided that the water body is susceptible to interstate or foreign commerce (33 CFR 328). The only waterbody of this kind in the Study Area is the tailwaters of the Lake. Several small stock ponds, consisting of impoundments along tributaries, exist in the Study Area. As these stock ponds are not susceptible to interstate or foreign commerce, their jurisdictionality with regard to the Clean Water Act would be addressed on a case-by-case basis and would likely be directly tied to the jurisdictional determination applied to the corresponding tributary.

## 3.6 FLOODPLAINS

A floodplain is defined as the area adjacent to a watercourse, including the floodway, inundated by a particular flood event. Under the approach of the Federal Flood Risk Management Standard, flood elevation can be determined by 1) use of best available data, including expected future changes in flooding based on climate science; 2) freeboard (base flood elevation plus 2 feet in most areas or 3 feet in critical areas); or 3) the 500-year flood elevation. A review of the influence of climate change was performed by the Corps in accordance with its policy on civil works studies, designs, and projects (Corps 2014a). The area of influence for this project is the contributing drainage area of the Missouri River watershed upstream of Gavins Point Dam. This includes the majority of the states of Montana, North Dakota, Wyoming, and South Dakota (Corps 2015b). This study concluded that the potential increases in flood magnitudes and stages are likely in the uncertainty range for the existing hydrology used to compute flood stages and the stage effects caused by projected sediment deposition. For these reasons, it was not recommended to change the flood frequency values to anticipated climate trends. Therefore, the effective FEMA digital Flood Insurance Rate Map (FIRM) for the 100-year flood event was used to identify floodplains for the project. For purposes of discussion in this Draft EIS, floodplain is synonymous with the 100-year floodplain. For a

#### **What is no-rise certification?**

Before any building, grading, or development permits involving activities in a regulatory floodway can be issued, it is necessary to obtain no-rise certification, stating that the proposed development will not impact the pre-project base flood elevations (100-year flood), floodway elevations, or floodway widths.

#### **What is a Letter of Map Change?**

“LOMCs are documents issued by FEMA that revise or amend the flood hazard information shown on the FIRM without requiring the FIRM to be physically revised and republished” (FEMA 2015). A LOMC can consist of a Letter of Map Revision (LOMR) or a Letter of Map Amendment (LOMA).

discussion on floodplain encroachment, see Section 3.6.1.

The project has the potential to impact three distinct hydraulic conditions: 1) Missouri River and tributary conveyance; 2) Missouri River storage; and 3) the Lake reservoir storage. Portions of the east segment are located in the upper regulatory zones of the Lake. The reservoir storage is linked to the capacity of the Lake to detain flood water. Changes in this capacity would affect the boundaries of upstream regulated floodplains. Portions of the west and east segments are located within the Missouri River floodplain. A detailed analysis of these hydraulic conditions can be found in Appendix H.

The project would affect existing Corps flowage easements. For a discussion on Corps flowage easements, see Section 3.6.5.

The designated Study Area for reviewing impacts on floodplains extends west to Verdel and east to the intersection of N-12 and County Road 531.

### 3.6.1 Floodplain Encroachment

Executive Order 11988, Floodplain Management (42 FR 26951), and amended by Executive Order 13960 (80 FR 6425) requires that federal agencies identify potential floodplain encroachment by projects they fund and that they assess the impact of this encroachment on human health, safety, and welfare and on the natural and beneficial values of the floodplain.

FEMA requires that construction within a floodway achieve a no-rise condition (that is, not increase the base 100-year flood elevation). Structures placed within a floodway may be designed in one of two manners to satisfy FEMA requirements. The first method is to design a structure that would not result in any increase in flood levels during the occurrence of the base (100-year) flood discharge. Alternatively, if it is not possible to obtain no-rise certification from FEMA, a Letter of Map Change (LOMC) may be obtained. This requires coordination among all affected parties, including the public. FEMA requirements for construction within the floodplain outside of the floodway are less stringent, allowing up to a 1-foot rise in the 100-year flood elevation.

FEMA requirements are enforced by local jurisdictions (counties and cities) in order to maintain participation in the FEMA National Flood Insurance Program. Knox County and Niobrara participate in this program.

### 3.6.2 Missouri River Conveyance

The digital FIRM identifies existing FEMA-designated floodplains in the Study Area (FEMA 2005). Areas designated as floodplains (Zone A) by FEMA are associated with the Missouri River and its unnamed drainageways, Ponca Creek, Harry Miller Creek, Medicine Creek, the Niobrara River, and Bazile Creek in the Study Area. An approximate Zone A is the flood insurance rate zone that corresponds to the areas with a 1 percent annual chance of flooding. Zone A is an approximate zone because a detailed analysis to determine 100-year flood elevations has not been developed. As such, no depths or base flood elevations are shown within these zones (FEMA n.d.). No floodway has been delineated for any of the floodplains in the Study Area (see Figure 3-3, 100-Year Floodplain).

**What is a FEMA designated Floodway?**

The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood (the 100-year flood) without cumulatively increasing the water surface elevation more than a designated height (typically, no rise is allowed).

**What is a FEMA designated Floodplain?**

A FEMA designated Floodplain is generally viewed as all lands within reach of a 100-year flood outside of the floodway.

### 3.6.3 Missouri River Floodplain Storage

Development in the non-conveying portion of the floodplain can affect Missouri River floodplain storage in two ways: 1) by direct displacement of storage volume by roadway earth fill; or 2) by isolating a portion of the floodplain by blocking or restricting flow into the non-conveying part of the floodplain with earth fill or insufficient hydraulic capacity of culverts and bridges. Restriction of flows through culverts and bridges under the roadway would have a detrimental effect on the time required for the elevation of the floodwaters to equalize on either side of the roadway embankment.

### 3.6.4 Lewis and Clark Lake Storage Zones

There are three regulatory zones defined for the Lake based on conditions with increasing water surface elevations behind Gavins Point Dam. The bottommost zone, Zone 1, extends from the top of the Multipurpose and Flood Control Pool (Elevation 1208.0 feet National Geodetic Vertical Datum of 1929 [NGVD 29]) to the top of the Exclusive Flood Control Pool (Elevation 1210.0 feet). The next zone, Zone 2, extends from the top of the Exclusive Flood Control Pool to the spillway maximum discharge design elevation (1221.4 feet). Zone 3 extends above Zone 2 to the top of dam (Elevation 1234.0 feet).

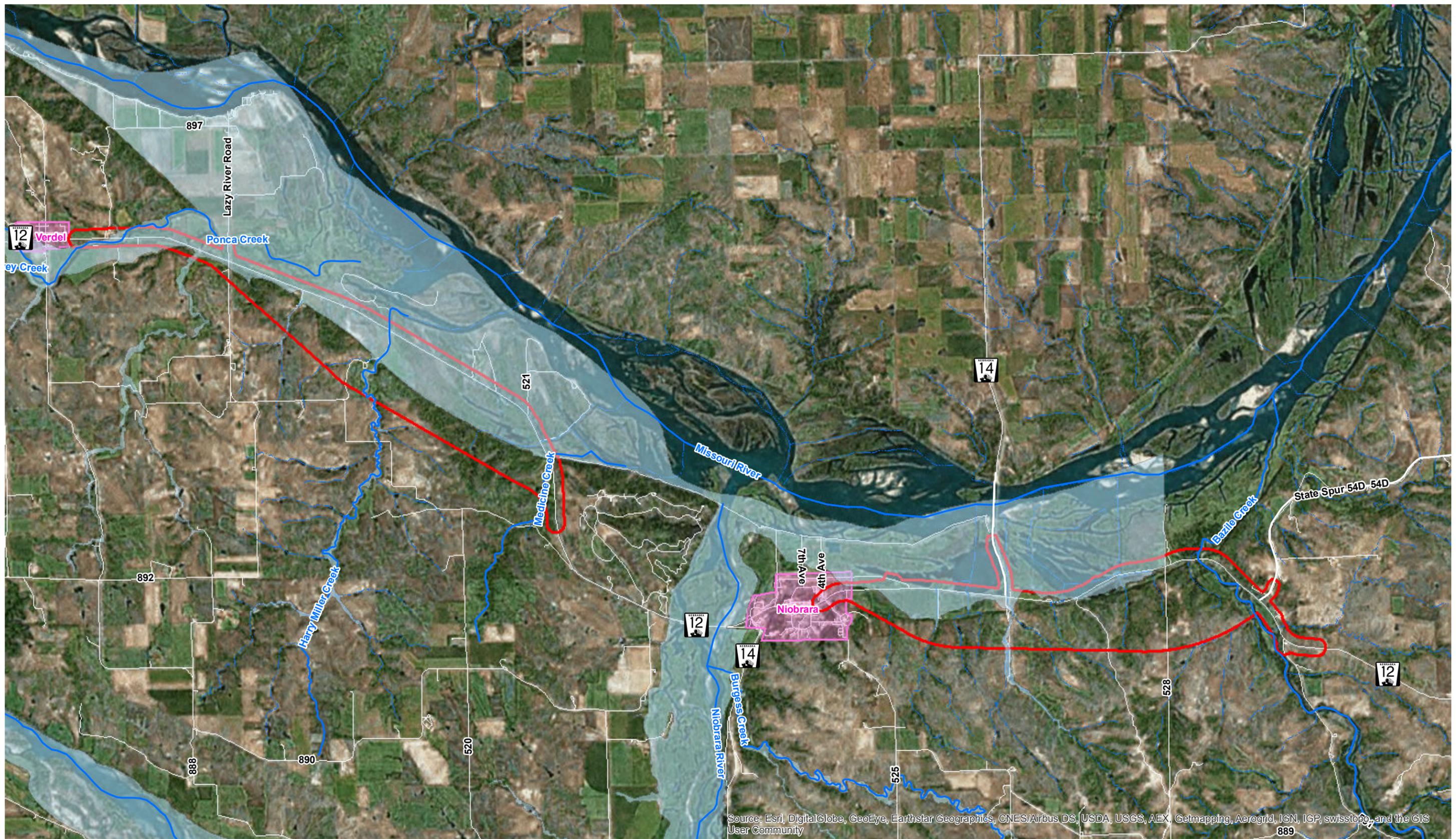
If volume is displaced in a regulatory zone by a potential development entirely on Corps-controlled lands, the equal amount of storage volume must be provided within the respective zone so there is no loss of volume. If the proposed project straddles Corps- and non-Corps-controlled land, the developer is encouraged to mitigate for fill. A linear project such as this project must be evaluated not only for the potential effects of actual displacement of storage due to the roadway fill placed in each zone but also for the potential effects of any blockage or impedance to floodwaters flowing into floodplain storage areas.

### 3.6.5 Corps Flowage Easements

Because of the high groundwater levels in the Study Area, the Corps has entered into flowage easements with a number of private landowners. Flowage easements purchased by the Corps provide temporary storage of flood water during periods of high rainfall. Because of the potential for flooding in the Study Area, allowable improvements to property with flowage easement restrictions are limited. Structures intended for human habitation (for example, houses, trailers, and apartment complexes) and septic systems are prohibited on land with a flowage easement. Structures not intended for human habitation (for example, gazebos, barns, storage buildings, and decks not attached to houses or trailers) may be allowed only after written permission in the form of a consent to easement has been obtained from the Corps. Vegetation alteration (for example, mowing, agriculture, and timber harvesting) may be allowed under the flowage easement restrictions. Excavation or placement of fill may be conducted only if approved by the Corps.

## 3.7 VISUAL

Visual landscape characteristics are the observed physical features of the land combined with the sensitivity of the landscape setting that affect the aesthetic value of an environment. Physical features can be natural, such as trees or rivers, or human made, such as roadways and utility poles. Physical features can be permanent, such as a house, or temporary, such as a moving vehicle. A variety of natural features, human made elements, and types of land use contribute to the visual resources of an area. The characteristics of the existing visual landscape were examined to assess how the project might affect viewers' perceptions of their surroundings. The analysis includes the Study Area and the surrounding viewshed from the bluffs on either side of the Missouri River.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



**Legend**

- Waterway
- 100 Year Flood Zone
- City Limits
- Study Area
- Roads



### 100-Year Floodplain

N-12 Niobrara East and West  
Knox County, Nebraska  
Environmental Impact Statement



DATE	October 2015
FIGURE	3-3

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In the Study Area, the Missouri River flows relatively unrestricted between Nebraska and South Dakota through a river valley 1 to 2 miles wide that is flanked by sheer chalkstone bluffs and rolling, loess-covered hills. The meandering river ranges from a few inches deep to more than 30 feet deep as the braided channel winds among willow and cottonwood covered islands and shifting sandbars. Near its confluence with the sediment-laden Niobrara River, extensive emergent wetlands form a complex of intertwined channels that present a contrast to other reaches of the Missouri River. The surrounding landscape transitions from riparian cottonwood forests to grasslands and cedar-dominated bluffs. Scattered farmsteads dot the undulating hills within an undeveloped rural landscape predominantly in pastures that evoke the vast original prairies. The combination of landforms, stream channels, and plant communities in the Study Area provide a rare glimpse of the natural conditions encountered by early inhabitants of the area.

The Missouri River was a principle highway and commerce route from the times of the Paleo-Indians through later tribes such as the Mandan, Sioux, Omaha, and Ponca. The importance of the river as a travel route was well documented by the Corps of Discovery Expedition. Today the Missouri River is valued for recreational purposes. Recreational users are sensitive to the aesthetic conditions of surrounding landscapes. N-12 provides views of the Missouri and Niobrara rivers from the road and public overlooks. The Niobrara State Park and Chief Standing Bear Memorial Bridge Overlooks reveal sweeping vistas within the Study Area. N-12 is a human made element within the visual landscape both as observed from the river and from elsewhere along its route and public overlooks.

Within the Study Area, NPS administers the Lewis and Clark National Historic Trail (NHT) and the MNRR (see Figures 3-1 and 3-2). NPS has a responsibility under the Organic Act (16 USC 1) to conserve the scenery of these Congressionally designated areas for the enjoyment of future generations. In addition, NHT and MNRR each have individual visual resource management objectives stemming from the legislation under which they were created.

The MNRR was established under the Wild and Scenic Rivers Act in 1978 along the 59-mile reach from Gavins Point Dam to Ponca. The 39-Mile District of the Missouri River from Fort Randall Dam to Running Water, South Dakota, and the lower 20 miles of the Niobrara River and its tributary Verdigre Creek were added in 1991. While much of the Missouri River valley has been heavily impacted by humans, the portion of the river system within the Study Area presents a more unaltered appearance. It exemplifies the scenic resources that are highly important along this segment of the MNRR.

The NHT was established by Congress in an amendment to the National Trails System Act in 1978 (16 USC § 1244(a)(6)). National historic trails follow as closely as possible the original travel routes of historic significance, and have as their purpose the identification and protection of the route, its historic remnants and its artifacts for public use and enjoyment. The setting or scenery surrounding historic trails contribute significantly to the visitor experience. The Corps of Discovery followed the Missouri River on their outbound and return journey. Adjacent to the Study Area, the NHT is a water-based trail along the Missouri River and N-12 is the designated auto tour route. Visitors following the NHT on the Missouri River or on N-12 are able to access an uncrowded landscape that provides a sense of isolation reminiscent of that experienced by Lewis and Clark.

In 1999, the Nebraska Scenic Byways Program established a 231-mile section of N-12 from South Sioux City, Nebraska, to Valentine, Nebraska, as the Outlaw Trail Scenic Byway. As its name suggests, the Outlaw Trail Scenic Byway has a rich Old West history, including rumors that outlaws frequented this area.

Attractions along the Outlaw Trail Scenic Byway include the Missouri River, state recreation areas (SRAs), the Lake, wildlife viewing, and other recreational opportunities (Nebraska Department of

Economic Development 2008a). In addition, the National Scenic Byways Program was established under the Intermodal Surface Transportation Efficiency Act of 1991 (23 USC 162). Under this program, the U.S. Secretary of Transportation recognizes certain roads as National Scenic Byways based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. The Outlaw Trail is one of 151 such designated byways in 46 states (FHWA 2007).

### 3.8 CULTURAL RESOURCES

Section 106 of the NHPA requires federal agencies to determine whether their undertakings will have adverse effects on historic properties (any archaeological site, historic structure, or other property listed on or eligible for listing on the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment (16 USC 470f). The Study Area (as defined in Chapter 1) has a complex history of prehistoric groups, historic Native American tribes, Euro-American explorers, early American settlers, and the Corps' engineering feats that have left the area rich with cultural resources, known and unknown.

Decades of regional Plains archaeological research in and near the Study Area has produced evidence of a sequence of varied human occupation over at least 12,000 years. The rich and varied topography, geology, animal life, and vegetation have provided many opportunities for many different prehistoric groups to hunt, gather, trade, and build settlements. The archaeological remains of their tools, weapons, campgrounds, food, and other objects provide clues to their lifestyles and habits. Prehistoric groups documented in the area include Paleoindian people, Archaic groups, Plains Woodland, Great Oasis, and Coalescent Tradition.

More recently, but prior to the arrival of Euro-Americans, historic Native American tribes including the Omaha, Ponca, Santee Sioux, Dakota, Pawnee, Arikara, Iowa, Otoe, Pawnee, and Lakota are believed to have used the area. The Ponca established their homelands in the vicinity of the mouth of Ponca Creek eastward to the vicinity of Bazile Creek between 150 and 350 years ago, before they ceded their lands for a reservation on the Niobrara River in 1858. (The Ponca Village and Agency sites, which are located just outside of the Study Area, were listed on the NRHP as a historic district in 2006.) The Santee Sioux were moved into their reservation in Knox County in 1866, which included most of the Ponca tribe's reservation. The Ponca tribe was forcibly moved to Indian Territory, Oklahoma, in 1878, but following a landmark legal struggle that ruled that "an Indian is a person" (*Standing Bear v. Crook*), many members of the Ponca tribe returned and were allotted land in and near the Study Area.

Euro-American exploration began in the early 1700s, with French and Spanish traders setting up trading posts in the late 1700s into the early 1800s. Fort Mitchell, Nebraska, once stood at the mouth of the Niobrara River, but its site was destroyed long ago by the Missouri River. In the 1800s, military expeditions began, most famously the Lewis and Clark expedition from 1804 through 1806. Nebraska Territory was opened to American settlement in 1854, and Niobrara was established in 1856. Steamboat and ferry service on the river aided immigration in the 1860s. Following a flood in 1881, Niobrara was moved to higher ground.

Late nineteenth and early twentieth century immigrants constructed farmsteads, houses, barns, cemeteries, and sites now associated with early settlement. A railroad further facilitated the development of rural communities in the Study Area; the Chicago and North Western Railway bridged the Niobrara River in 1902. In response to the need for flood control, navigation, irrigation, and hydroelectric power, Fort Randall Dam and Gavins Point Dam were constructed in the mid-1950s. When rising groundwater continued to threaten Niobrara in the 1960s, the entire town was again moved in the 1970s to its current location. The old town site from the 1960s is now a community golf course.

The river valley contains a series of cultural landscapes that were created through the interaction of people with natural forms or forces. These landscapes include residences and farm buildings, bridges, roads and trails, fences and corrals, orchards and gardens, cultivated fields, grazing land, and forested areas. These landscapes are characteristic of this area, not only because of the landforms and vegetation, but because of the ways people settled them and used its resources (NPS 1997).

To identify archaeological and historical resources, a survey was conducted in 2004 and 2005 along the Existing and Parallel alignments (Alternatives A1 and A2) (Bozell 2005) and in 2007 and 2008 along the Base of Bluffs, Bluffs, and South of Bluffs alignments (Alternatives A3, B1, and B2) (Ludwickson 2009) within the Area of Potential Effect (APE), defined as each Action Alternative's limits of construction. A historic standing structures survey was performed in the fall of 2008 (Dirr 2008) with the APE defined as the Study Area for the project.

### 3.8.1 Archaeological Sites

Of 25 archaeological properties identified, five are either listed on the NRHP or are believed to meet eligibility criteria of significance and integrity for listing on the NRHP and could be affected by the project. The five properties evaluated include the following, listed from west to east: 1) Site 25KX10 (Minarik III); 2) Site 25KX1 (Ponca Fort); 3) Site 25KX2 (Minarik I); 4) Site 25KX9 (Minarik II); and 5) Site 25KX44 (Dean Frank Site). The other 20 properties are either not eligible for listing on the NRHP or are outside of the APE and were not further evaluated under Section 106 of the NHPA for potential effects.

Any site with human burials would be evaluated regardless of whether it is eligible for listing on the NRHP.

### 3.8.2 Historic Structures

The historic standing structures survey (records search and field review) reviewed three properties: two rural residential buildings and the United Church of Christ on the Santee Sioux Reservation (Site KX00-212). The two residential buildings are likely Native American allotment homes and represent a physical impact on the landscape of a significant historic period in the nation's history. Each of the allotment homes is registered to a member of the Santee Sioux Tribe. Due to integrity issues, however, the allotment homes are not eligible for listing on the NRHP. The United Church of Christ is recommended eligible for listing on the NRHP. Nebraska SHPO concurred with the eligibility findings (see Appendix N, letter from SHPO, November 20, 2008). The United Church of Christ building was moved to its current location south of N-12 and east of Bazile Creek in the 1940s. Figure 3-1 identifies the locations of the allotment homes and the United Church of Christ.

### 3.8.3 Traditional Cultural Properties

Traditional cultural properties are those that are associated with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community (Parker and King 1998). Emphasis in the Section 106 of the NHPA regulations is placed on identification and consideration of Native American tribal and culturally significant properties. The Section 106 of the NHPA process requires that federal projects identify, on and off tribal lands, any sites of religious or cultural significance that may be affected by a proposed project (Nebraska SHPO 2006). One candidate traditional cultural property is Maiden's Leap, which is not an archaeological site but rather a semi-detached free-standing outcrop of Niobrara formation chalk that overlooks the confluence of Bazile Creek and the Missouri River. While folklore stories have been generated about this local landmark, it is of uncertain significance to either

the Santee Sioux Tribe or Ponca Tribe. Maiden's Leap would not be affected by any of the alternatives (Ludwickson 2009).

### 3.9 RECREATION

The Study Area (see Figure 3-1) includes several public recreational resources, including the Missouri River, state lands, trails, and local recreation facilities. The designated Study Area for reviewing impacts on recreation extends west to Verdel and east to the intersection of N-12 and County Road 531. The Missouri River alone provides opportunities for boating, fishing, and bird and wildlife viewing. These opportunities attract visitors from various parts of the Midwest, resulting in a great deal of recreational use of the Missouri River in and near the Study Area.

#### 3.9.1 Missouri National Recreational River

The section of the Missouri River adjacent to the Study Area was designated as the 39-Mile District of the MNRR in 1991 under the Wild and Scenic Rivers Act (16 USC 1271-1287), which provides federal protection to preserve certain free-flowing rivers and their immediate environments (see Section 3.1, Wild and Scenic Rivers). The 39-Mile District, shown in Figure 3-2, starts immediately downstream of Fort Randall Dam and continues downriver to Running Water. In addition, the 39-Mile District includes the lower 20 miles of the Niobrara River and the lower 8 miles of Verdigris Creek, which were designated as recreational rivers (the Niobrara National Recreational River and Verdigris Creek Recreational River) in 1991 because of the outstandingly remarkable natural, recreational, and cultural values that warrant preservation (NPS 2005). Common activities along the recreational river include fishing, boating, hiking, scenic drives and views, and camping.

The Missouri River between Fort Randall and Gavins Point dams provides a valuable fisheries resource for the states of Nebraska and South Dakota. This river reach annually supports more than 100,000 hours of fishing activity. Almost 36,000 fish of all species were harvested from this reach in 2005, with channel catfish and walleye being the most abundant species. The estimated impact of the Fort Randall Dam to Gavins Point Dam fishery is \$2.3 million on the local economy of that same year (SDGFP 2006).

#### 3.9.2 State Lands

Niobrara State Park located adjacent to the Study Area, is 1 mile west of Niobrara in the bluffs overlooking the confluence of the Niobrara and Missouri rivers (see Figure 3-1). Amenities include cabins, recreation vehicle camping, primitive camping, equestrian camping, a swimming pool, and Missouri River boat access. Visitors enjoy activities such as camping, hiking, fishing, cross-country skiing, and boating (Nebraska Department of Economic Development 2008b). Equestrian camping includes approximately 160 acres of open riding area located in native grassland with rolling hills with primitive camping facilities that include a non-modern restroom, picnic table, and grill. There are no corrals or water in this area (NGPC 2015c). Hikers on the historic Chicago and North Western Railway bridge and walking trail over the Niobrara River just north of Niobrara can view a historic Lewis and Clark campsite located at the confluence of the Niobrara and Missouri rivers. Anglers can fish the Niobrara River from the railroad bridge.

NGPC maintains three boat access areas to the Missouri River: 1) at Verdel Landing Wildlife Management Area (WMA); 2) at the old Niobrara townsite; and 3) at Ferry Landing WMA (see Figure 3-1). Verdel Landing WMA is located 2 miles east and 2 miles north of Verdel. This location has a double-wide public-access boat ramp and public parking (NGPC 2008). The Niobrara Townsite Boat Ramp is located north of the old Niobrara townsite at RM 844. The boat ramp has double-wide concrete ramps that are unusable during periods of low flow, and there is public parking (NGPC

2015d). Ferry Landing WMA is located 2 miles east of Niobrara at RM 841, near Chief Standing Bear Memorial Bridge. This location has a public-access boat ramp (NGPC 2008).

Bazile Creek WMA, located 4 miles east of Niobrara (RM 838.8), is 4,424 acres of wetlands, with some mixed woods and grasslands. This WMA is often known as Nebraska's Everglades due to the high water table resulting from Gavins Point Dam downstream of the site. Portions of the Bazile Creek WMA are within the Study Area (see Figure 3-1). Wildlife encountered in Bazile Creek WMA includes deer, dove, pheasant, quail, rabbit, squirrel, turkey, and waterfowl (Northeast Nebraska Travel Council 2006). NGPC establishes WMAs for the purpose of fishing, hunting, and trapping in season. Primitive camping, horseback riding, and installing ice shelters and deer stands are allowed. Hunters and anglers pay the entire bill for the acquisition, development, and maintenance of WMAs through the purchase of hunting and fishing permits and Habitat Stamps and through excise taxes on hunting and fishing equipment (NGPC 2010b).

### 3.9.3 Trails

The NHT, along the Missouri River adjacent to the Study Area, was authorized by the National Trails System Act of 1978 (16 USC 1241-1249) and is officially administered by NPS. The NHT extends 3,700 miles, passes through 11 states, and includes more than 100 sites from Wood River, Illinois, to the mouth of the Columbia River in Oregon, following the outbound and inbound routes of the Lewis and Clark Expedition of 1804-1806 (NPS 2006, 2009d). The trail intends to preserve and protect remnants of the historic route. In the vicinity of the Study Area, trail points of interest include the Lewis and Clark Visitor Center at the Lake and the Niobrara State Park (NPS n.d.). Recreationists could hike, explore, ride horseback, raft, canoe, ski, or snowshoe in areas along the NHT.

The George Shannon Trail is a 240-mile road network located in northeastern Nebraska and was created in 2001 "in an effort to make Lewis [and] Clark history come alive, to promote tourism, and to unite area communities in a common effort" (ShannonTrail.com n.d.). The Nebraska communities involved are Bloomfield, Bow Valley, Center, Creighton, Crofton, Hartington, Lindy, Niobrara, St. Helena, St. James, Santee, Verdel, Verdigre, Wausa, Winnetoon, Wynot, and the Ponca and Santee Sioux Nations. N-12 within the Study Area is part of the trail network. Along the trail, there are 13 life-sized carved wooden statues of Private George Shannon, located in participating communities, and 16 wayside signs commemorating his life. Known from the Lewis and Clark Expedition, Private Shannon was lost for 16 days in what is now northeastern Nebraska from Sioux City, Iowa to the mouth of the Niobrara River. The George Shannon Trail is a certified NPS trail (ShannonTrail.com n.d.).

### 3.9.4 Local Recreation

The Niobrara Valley Golf Course is a nine-hole golf course constructed on the former site of Niobrara (City of Niobrara 2008).

Several hunting lodges or outfitters are located in the vicinity of Niobrara, including Whitetail River Lodge, Swanson Hunting Acres, and KSK Big Game Outfitters/Kreycik Riverview Elk Ranch. During the summer months, Kreycik Riverview Elk Ranch offers covered wagon tours of an elk and bison ranch and farm (City of Niobrara 2008). East of Niobrara, but within the Study Area, Niobrara Outfitters Co., a waterfowl hunting operation, leases land north of N-12. Southeast of Niobrara and outside of the Study Area, the Mah Ko Chay rental cabins are located off of 525 Avenue.

None of these facilities are within the Study Area.

### 3.10 PEDESTRIANS, BICYCLISTS, AND CANOEISTS

Existing pedestrian, bicycle, and canoe facilities were identified adjacent to the Study Area, and various plans for future facilities were reviewed. The designated Study Area for reviewing impacts on pedestrians, bicyclists, and canoeists extends west to Verdel and east to the intersection of N-12 and County Road 531.

Niobrara State Park, located 1 mile west of Niobrara, provides 12 miles of trails for hiking, biking, cross-country skiing, and equestrian use. All trail surfaces are mowed grass except for the 2.1-mile Niobrara River Trail and the 1-mile Deer Creek Trail; these trails have a chipped limestone surface, and they are designated as accessible to persons with disabilities. Trails at Niobrara State Park include the following (NGPC 2015c):

- Niobrara Trail, a 2.1-mile hiking and bicycle trail, traverses the entire northern boundary of Niobrara State Park (see Figure 3-1) and offers some unique views of the timbered river bluffs and wetland areas. The 8-foot-wide limestone-surfaced trail is accessible to persons with disabilities. In winter, this trail is open to cross-country skiers and snowmobilers. Horses are allowed along the side of this trail. The historic Chicago and North Western Railway bridge, which spans 1,200 feet of the Niobrara River, is part of the Niobrara Trail.
- Deer Creek Trail, a 1-mile trail, is located in the middle of the picnic and tent area in Niobrara State Park. This limestone-surfaced trail has three wood-constructed bridges and is accessible to persons with disabilities. This trail traverses a valley filled with a variety of trees and wildlife. The Americorps Team built this trail in 1997.
- The Cabin Ridge to River Access Trails are mowed grass with steep hills and ravines. These trails lend access to the Niobrara Trail.

The Upper Missouri River Canoe Trail extends 37 miles from Fort Randall Dam to Niobrara (see Figure 3-1). In general, the river in this section is in a semi-natural state; the trail follows a braided and winding course, with the channel alternating between the shorelines. The river can be 25 feet or deeper in some places. SDGFP recommends that only experienced paddlers use the river because of quickly changing weather, potential high waves, long distances between launch sites, and fast currents (SDGFP n.d.). Access sites in Nebraska include the Randall Creek Recreation Area just downstream of the Fort Randall Dam, Sunshine Bottom north of Lynch, Nebraska, Verdel Landing WMA, and Niobrara State Park (NGPC 2004). Canoeists can also access the river in South Dakota at SD-37 and at Running Water (SDGFP n.d.).

Nebraska's many low-volume state roadways create many opportunities for bicycling in Nebraska. NDOR identifies N-12 as having fair compatibility with bicycling. Rural Bicycle Compatibility Index ratings were based on research done by the University of Nebraska at Omaha. The degree of compatibility was mostly affected by the width of the paved shoulder and the number of heavy trucks. Highways were rated High Compatibility, Fair Compatibility, Low Compatibility, and Bicycles Prohibited (such as on interstate highways and freeways) (NDOR 2007).

#### **What is the Recreational Trails Program (RTP)?**

The RTP provides funds to states to develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses. The RTP is an assistance program of FHWA (RDG 2004)

#### **What is NDOR's 28-foot-section program?**

NDOR adopted a policy in 2002 to provide a 28-foot paved roadway surface for state highways with average daily traffic between 850 and 3,000 vehicles per day. This policy includes providing a pavement stripe 2 feet from the edge of pavement, and is very beneficial to experienced road cyclists. It both defines the vehicular travel lane and provides a defined route for bicyclists (RDG 2004).

The current status of the trail network in the vicinity of the Study Area and the priorities for this trail network from a regional basis are identified in “A Network of Discovery: A Comprehensive Trails Plan for the State of Nebraska,” as follows (RDG 2004):

- Current status
  - Niobrara Trail in Niobrara State Park was completed in the early 1990s with Recreational Trails Program (RTP) funding. Extension into Niobrara has been considered but is not complete.
  - NDOR’s 28-foot-section program is complete along N-14 from Verdigre to Niobrara.
  - Funding of a riverfront nature trail through an RTP grant has been awarded to the Santee Sioux Reservation.
- Regional priorities
  - Extend Niobrara Trail from Niobrara State Park into Niobrara.
  - Construct Verdigre Creek Trail between Verdigre and Niobrara.
  - Evaluate S-54D to determine whether a 28-foot section is necessary. Volumes may be sufficiently low to make share-the-road signage adequate.
  - Upgrade N-12 to a 28-foot section.

Another potential project identified in “A Network of Discovery: A Comprehensive Trails Plan for the State of Nebraska” is a trail or bicycle route extension across the N-14 bridge (that is, Chief Standing Bear Memorial Bridge) to Springfield (RDG 2004).

### 3.11 ACQUISITIONS AND RELOCATIONS

The Study Area (Figure 3-1) is in a primarily rural setting consisting of farmsteads, pasture, farmland, and publicly accessible natural areas outside of Niobrara; residential and commercial properties exist in Niobrara. The Study Area includes multiple property and land owners. As acquisitions may occur outside of the Study Area, the Study Area for acquisitions and relocations is extended to include all areas that would need to be acquired because access to those parcels would no longer be maintained. This includes all areas from the existing N-12 alignment northward to the Missouri River, in the case of Alternative A3 and A7 where the existing roadway would be removed.

The project would require new ROW within the Study Area, and has the potential to require acquisition of parcels and relocation of property owners outside of the Study Area. Therefore, as the applicant and proponent for the project, NDOR’s ROW acquisition and relocation process and the federal and state regulations designed to protect property owners during this process are described in the following sections.

#### 3.11.1 Right-of-Way Acquisition Process

ROW acquisition with federal funding could commence after completion of the environmental review process (see Figure 3-4). Following an appraisal, property owners would be offered and paid, should they choose to accept the offer, fair market value for their residential property. They may also elect to donate their property. The payment would be through fee simple acquisition. An acquisition and relocation program would be

**What is right-of-way?**

ROW is land acquired by purchase, gift, or eminent domain in order to build and maintain a public road (NDOR 1998).

**What are acquisitions?**

Acquisitions are parcels acquired for ROW or when access can no longer be maintained.

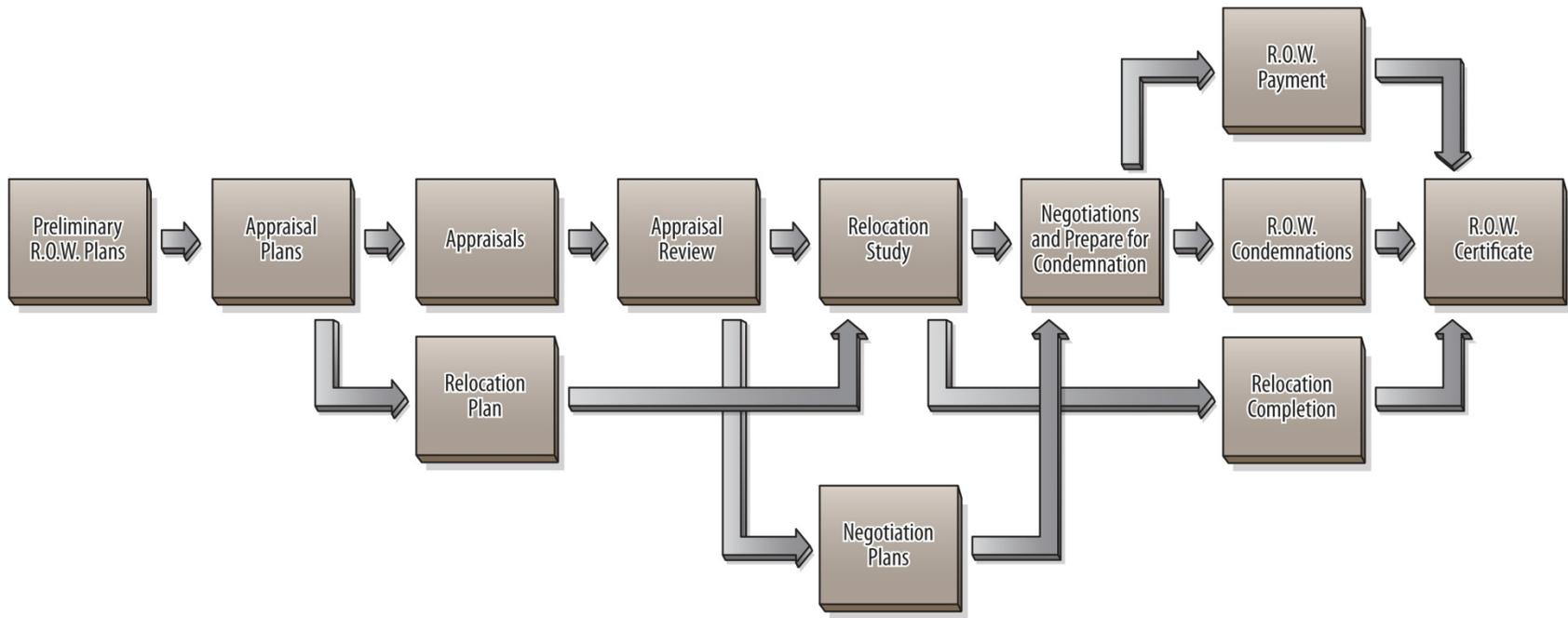
**What are relocations?**

Relocations are residences, businesses, and other buildings that are moved when the land is acquired.

conducted in accordance with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended (42 USC 4601 et seq.) and the Nebraska Relocation Assistance Act (Neb. Rev. Stat. § 76-1214 et seq.).

### 3.11.2 Uniform Act

The Uniform Act provides important protections and benefits for people affected by federal and federally assisted projects. Its purpose is to provide for uniform and equitable treatment of all persons relocated from their residences, businesses, and farms, without discrimination on any basis. The Uniform Act ensures that property owners are compensated fairly for their residential structures. It requires that the sponsor of a project provide financial and technical relocation assistance for relocated residents. The Uniform Act also contains allowances for renters. A one-time rental assistance payment is available for the tenant to find a decent, safe, and sanitary dwelling for a period of 42 months. NDOR's Right of Way Manual contains the guidelines used by NDOR for carrying out the provisions in the Uniform Act (NDOR 2009e).



**Figure 3-4 NDOR Right-of-Way Acquisition Process**

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Additional information pertaining to Nebraska's relocation assistance can be obtained by contacting the following:

NDOR  
1500 Highway 2  
Lincoln, NE 68509  
1-800-764-0422  
<http://www.dor.state.ne.us/roway/relocate.htm>

### 3.11.3 Relocation Assistance

Every displaced person would be eligible to receive advisory service in relocating to a replacement dwelling or non-residential location. When certain eligibility requirements are met, displaced persons are entitled to financial assistance for relocating their personal property and for the increased costs of buying or renting a replacement dwelling. Individuals and families displaced from dwellings (including condominiums, cooperative apartments, and mobile homes) acquired for highway purposes are eligible for replacement housing payments (NDOR 2009e).

Replacement housing payments are available to qualifying displaced persons to compensate them for increases in housing costs caused by acquisition of their dwellings. These payments represent the difference between the value of the present dwelling and the value of a comparable dwelling that is decent, safe, and sanitary, as determined by NDOR (NDOR 2009e).

Reimbursement is available for individuals and families on the basis of actual, reasonable moving costs and related expenses or according to a fixed moving-cost schedule based on the number of rooms in the acquired dwelling.

Payments are available for moving businesses, including farms. The payments are for reimbursement of the following:

- Costs associated with moving personal property
- Time spent searching for a new location
- Actual loss of tangible personal property
- Expenses in re-establishing at a new site

In lieu of the other relocation benefits, a fixed payment is also available. This payment is between \$1,000 and \$20,000, based on the net earnings of the business or farm. Not all businesses, farms, or nonprofit organizations qualify for all payments. A relocation study would determine the extent of eligibility (NDOR 2009e).

### 3.11.4 Housing of Last Resort

The federal Housing of Last Resort program (49 CFR 24.404) allows the use of project funds to construct or otherwise provide housing. No eligible person would be required to move from the ROW acquired until comparable decent, safe, and sanitary housing is available for immediate occupancy. These procedures are implemented when normal payment limits for relocation assistance are inadequate to solve the housing needs of eligible displaced persons (NDOR 2009e).

3.12 RESOURCES NOT AFFECTED OR MINIMALLY AFFECTED BY THE PROJECT OR NOT PRESENT IN THE STUDY AREA

The following table lists resources in addition to those discussed above. These are resources that the project would not affect or would affect only minimally or that do not exist in the Study Area. For an analysis of the resources not affected or minimally affected by the project, see Appendix C.

**Table 3-3  
Resources Not Affected or Minimally Affected by the Project or Not Present in the Study Area**

Resource	Summary	Appendix
<b>Resources Not Affected or Minimally Affected by the Project</b>		
Noise	A noise study conducted in 2008 identified current noise levels for the Study Area. Noise monitoring was performed at representative noise receivers along existing Nebraska Highway 12 (N-12) to determine existing noise levels, and computer-generated noise modeling was completed and compared to the readings at the monitoring locations to verify their accuracy. In addition, noise monitoring was performed at representative noise receivers throughout the Study Area to determine noise levels. Noise modeling was not necessary because there is currently no traffic in most of the Study Area.	Appendix C contains the noise analysis, and Appendix I contains the noise study.
Land Use	Land uses in the Study Area consist of rangeland and agriculture, woodlands, water/wetlands, roadways and embankments, publicly accessible lands, residential, commercial and industrial, flowage easements, and the Santee Sioux Reservation. The project would convert rangeland and agriculture and water/wetlands to right-of-way (ROW).	Appendix C contains the land use analysis.
Farmland	Prime and unique farmland and farmland of statewide importance were identified by reviewing current Knox County, Nebraska, soil survey information from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) (2008). None of the land within the Study Area is classified as unique farmland. Prime farmland in the Study Area is generally found within the fertile alluvial floodplain of the Missouri River.	Appendix C contains the prime farmland analysis, and Appendix J contains the USDA Farmland Conversion Impact Rating Forms.
Regulated Materials	No locations with Recognized Environmental Conditions would be within the permanent area of impact for any of the alternatives.	Appendix C contains the regulated materials analysis, and Appendix G contains the Environmental Data Resources, Inc. (EDR) report.
Air Quality	Knox County is in attainment for all criteria pollutants; thus, no conformity determination is required for the Study Area	Appendix C contains the air quality analysis.
Social	Social characteristics include population, environmental justice, public services and facilities, and transportation.	Appendix C contains the social analysis.

Resource	Summary	Appendix
Economics	Economic characteristics include business and access, income and employment, and tax base.	Appendix C contains the economic analysis.
Energy	Energy use during operation and construction.	Appendix C contains the energy analysis.
Climate Change	The current roadway deficiencies are not linked to climate change. Climate change is a global and cumulative issue.	Appendix C contains the climate change analysis.
<b>Resources Not Present in the Study Area</b>		
Coastal Barriers and Coastal Zones	The Study Area is not located along a coast, and there are no coastal barrier units designated in the Study Area. Therefore, the project would not affect any coastal barriers or coastal zones.	Not Applicable
Railroads	No railroads currently operate through the Study Area or in Knox County. There is an abandoned Chicago and North Western Railway rail line, which is listed on the National Register of Historic Places (NRHP), in the vicinity of the Study Area. The historic Chicago and North Western Railway bridge across the Niobrara River, which is listed on the NRHP, is now part of a walking trail located in Niobrara State Park (see Section 3.9). Therefore, the project would not affect railroads.	Not Applicable
Section 4(f)	As discussed in Chapter 1.0, Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 established the requirement for protection of publicly owned parks, recreation areas, wildlife and waterfowl refuges, and historic sites from conversion to a transportation use. The law, codified in 49 United States Code (USC) 303 and 23 USC 138, is implemented by Federal Highway Administration (FHWA) through the regulation 23 Code of Federal Regulations (CFR) 774. Section 4(f) applies to projects that receive funding from or require approval by a USDOT agency. In this case, the project would not receive money or an approval from USDOT, so Section 4(f) does not apply. However, impacts on park and recreational lands, wildlife and waterfowl refuges, and historic sites will be evaluated (see Sections 3.8, Cultural Resources; 3.9, Recreation; 4.8, Cultural Resources; and 4.9, Recreation).	Not Applicable
Section 6(f)	As discussed in Chapter 1.0, Section 6(f) of the Land and Water Conservation Fund Act of 1965 (16 USC 4601-4 through 4601-11) was enacted to help preserve, develop, and assure access to outdoor recreation facilities to strengthen the health of U.S. citizens. Two properties purchased using Land and Water Conservation (LAWCON) funds exist in the vicinity of the Study Area. The first is a city park in Niobrara, north of N-12/Walnut Street and west of 7 <sup>th</sup> Street. This area would not be affected by the project because no construction is proposed other than improvements to N-12 on the east side of Niobrara. The second is Niobrara State Park, located 1 mile west of Niobrara. LAWCON funds were used to help acquire some property and to improve the swimming pool facilities and the picnic facilities. Although some alternatives would require a change in land use, Niobrara State Park would not be directly impacted by these alternatives. The impacts on Niobrara State Park are addressed in Section 4.9, Recreation.	Not Applicable

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